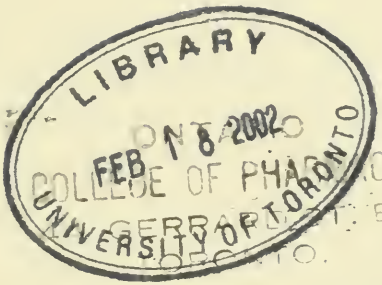
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Sketch of Life in this Issue.



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HISTORY OF THE AMERICAN PHARMACEUTICAL ASSOCIATION. SECOND DECADE.

WILLIAM C. ALPERS, SC. D.

(Continued from December Number.)

When the Association convened for its sixteenth meeting in 1867 at Philadelphia, President Milhau was unable to attend owing to ill health and the First Vice-President, Robert J. Brown, therefore presided the first half of the meeting. There were one hundred and thirty-four members present, the first time that one hundred was exceeded. One of the members of the Association who had died during the preceeding year, was Henry F. Fish, of Connecticut, who had been present at the first annual meeting, who came from his interest in the new Association without having been delegated by any local association or college. He was Third Vice-President in 1855.

The President's address was note-worthy for its many recommendations, nearly all of them affecting the usefulness of the Association and methods for expediting transaction of business. These recommendations were afterwards taken up and caused much debate and exchange of opinion, in which old and new members of the Association participated. At the close of his address, Mr. Milhau made these pertinent remarks:

"I would address you according to my convictions on the true plan, to use the words of the Constitution, 'Of improving the science and art of pharmacy, of regulating the system of apprenticeship, and of suppressing empiricism' with any degree of success—and that is by professional instruction. It will require the whole influence of every member to further the plan proposed or a better one. It will take a long time and require hard work. We must commence by organizing our forces. It would be necessary to appoint 'a central committee on laws and colleges,' and all the members in each state should band themselves together and constitute 'sub-committees' for their respective states. The general committee should publish a full collection of all the existing state laws bearing on the subject, together with comments, followed by an account of kindred laws in Great Britain, especially those lately enacted. They will issue instructions as far as necessary, and drafts of the proposed laws for

the use of the sub-committees. Every member should, by explanation and by all proper arguments, endeavor to enlist the influence of every prominent citizen he can reach,—the state representatives, the ministers, the lawyers, the physicians, his customers, and the editors—so as to bring the legislature and executive of each state over to our views, and never cease, till we have obtained the requisite laws, and founded a college of pharmacy in each state. It was by such means that we succeeded in obtaining the drug law of 1848, when the country was much less prepared for such a step than now."

He also makes a plea for the official recognition of pharmaceutical colleges and hopes that the time will come soon when a diploma or certificate will be a *sine qua non*. Such a statement from a man who was generally supposed to be a representative of the business part of pharmacy and at such an early date deserves recognition.

Among the delegates there were two from Canada, and Mr. Stearns took occasion to welcome them and offered the following resolution:

"*Resolved*, That the American Pharmaceutical Association welcomes heartily the presence at this meeting of the delegates from the Montreal Chemists' Association—the first one credited to us from the Dominion of Canada."

The two delegates, Mr. Mercer and Mr. Edwards, replied in a happy and pleasing manner.

Among the new officers elected at this meeting, there were Edward Parrish of Philadelphia, for President; Albert E. Ebert of Chicago, one of the Vice-Presidents; and Dr. Frederick Hoffman of New York, Chairman of the Committee on the Progress of Pharmacy. This last election was certainly a high tribute paid to Dr. Hoffman, who had only joined the Association at that meeting.

The question of incorporation again caused a long debate in which all the leading men participated and it is remarkable how nearly every one opposed it. Mr. Procter says: "My own view is in opposition to such a course. I do not approve of it." Mr. Stearns says: "You could not get it if you wanted it." Mr. Bedford says: "My views are the same." Prof. Moore says: "I don't see any practical advantage in incorporation." No action was taken.

A long, and sometimes heated, debate took place when the second letter from the East River Medical Association was read with reference to the renewal of prescriptions. Those who are interested in the various views as to the proprietorship of prescriptions and the proper attitude of pharmacists to take, so as to do justice to physicians, as well as to the public should not fail to read these discussions which took up more than twelve pages in very small type and thoroly exhaust the subject. The matter was finally referred to a Committee of five, with Mr. Stearns as Chairman, who at a later session offered the following resolution, which was adopted by unanimous vote. While the question itself was not settled thereby, it is well worth while to reproduce this resolution, so as to show the opinion of the Association on this question forty years ago.

"WHEREAS, The East River Medical Association of New York, through its Secretary, has submitted a preamble and series of resolutions regarding the renewal of physicians' prescription without the authority for such renewals, for our consideration, and

"WHEREAS, The discussion of this important subject has called forth a free expression of opinion from our members; therefore be it

"*Resolved*, That this Association regard the pharmacist as the proper custodian and owner of the physicians' prescriptions once dispensed

"*Resolved*, That however desirous we may be to accede to the request of the East River Medical Association, the restriction of the pharmacist to a single dispensing of a prescription, without the written authority of the prescribing physician for its renewal is neither practicable nor within the province of the Association. Nevertheless we regard the indiscriminate

renewal of prescriptions, especially when intended for the use of others than those for whom they were prescribed, as neither just to the physician nor to the patient, between whom we stand as conservators of the interests of both, and that such abuses should be discouraged by all proper means."

The recommendation of the President to have a committee appointed to collect formulas for un-official preparations, also brought out many diverging opinions, but finally such a committee was appointed. The question of a rather political nature that agitated this country ever since, was that of duties on drugs, and it seems that the members of the Association at that time were not impressed particularly with the value of high tariff, for "on motion of the Business Committee, it was resolved, that in the opinion of the Association the duties on drugs ought to be reduced."

Query 16, presented at the sixteenth meeting, namely, "How far is Pharmacy entitled to rank as a Profession, and what is its true position among the industrial pursuits?" had been left for general acceptance, but, not being answered, it was presented by the President for general discussion. In the course of these discussions the question of the name of "Pharmacal" and "Pharmacist" was again brought up and Mr. Parrish made the remark: "Now for these terms 'pharmacist,' etc., was it not I that read the first paper about it? I shall have to claim that invention. You will find it in the Proceedings of two years ago at Detroit—a paper proposing the general use of the term 'pharmacist' "; to which, however, the following retorts were made: Dr. Squibb said: "You can find it in Worcester's dictionary"; and Mr. Markoe said: "Webster has had it for many years."

In order to settle this claim of Mr. Parrish of the words "pharmacist," and "pharmacal," and "pharmacy," to indicate the place of business of the pharmacist, your historian has taken much pains in tracing these words, with this result: In Webster's Dictionary the word "Pharmacist" appears in the edition of 1865 for the first time, preceding edition of 1857 not having it. In Worcester's Dictionary it appears first in 1866. This shows that it was used in the United States before Mr. Parrish read his paper in 1866. In English literature it appears in Lord Bulwer Lytton's novel, "The Last Days of Pompeii," which was published in 1834. The quotation being, (part 1, pg. 11) "Unskilful pharmacists! pleasure and study are not elements to be thus mixed together." In none of these works does the word "pharmacal" appear, and the word "pharmacy" is defined as the science and art of preparing medicine. It will be seen therefore, that Mr. Parrish cannot claim priority to the word "pharmacist," but is entitled to the invention of "pharmacal" and the application of "pharmacy" to the place of business of the pharmacist.

The question whether pharmacy was a business or a profession was answered by most of them stating that it was neither, it was an art; claiming that the word "art" was more comprehensive, broader and more significant, than either of the others.

The question of a code of ethics was brought up by Mr. Maisch. A code of ethics was drafted at the preliminary meeting in 1851, which gave rise to the American Pharmaceutical Association. It was also printed in the first volume of the proceedings, but after that was omitted. Mr. Maisch asked the question

whether this code of ethics was still in force and whether new members in signing the Constitution also subscribed to this code. The matter was finally referred to a committee under the chairmanship of William J. Procter, Jr., to report at a later meeting. This committee reported that the original code of ethics was afterwards incorporated in the Constitution and that there seemed to be no necessity to continue it any longer. A motion by Mr. Allison that the code of ethics be considered as superseded by, and embodied in, Article 1 of the Constitution, was unanimously adopted.

The regret of President Milhau, that it was sometimes very difficult to obtain the proper information on the life and doings of deceased members, caused the Business Committee to bring forward the suggestion that the members of each state form a local committee to furnish the Executive Committee with proper information. It was also suggested that an obituary committee might be created. Later on another resolution bearing on this question was offered, namely:

"Resolved, That a committee of five be appointed by the chair to solicit photographs of members of the Association to be kept in an album, to be on exhibition at our future meetings."

It is to be regretted that the idea of making a card for every new member, on which all facts and details of his life, education, work and activities, inside and outside of the Association were to be recorded, was not established at this time. Such a cabinet of cards, embracing by this time about four to five thousand names, would be more than valuable material for the present or future historian, and would have the undisputed advantage of authenticity.

Dr. Hoffman called the attention of the Association to the fact that Professor Ehrenberg of Berlin, inventor of the microscope, was about to celebrate the fiftieth anniversary of his Doctorate, and that it would be proper for this Association to appoint a committee to prepare an address embodying the kind sentiments of the Association, to be sent to Dr. Ehrenberg on the occasion of his approaching jubilee. The Committee consisted of Dr. H. P. Procter and Mr. J. M. Maisch.

A number of honorary members, living in Europe, were appointed at this meeting, namely:

Daniel Hanbury	London, England
Henry Deane	London, England
A. T. De Meyer	Brussels, Belgium
Norbert Gille	Brussels, Belgium
Dr. F. A. Fluckiger	Berne, Switzerland
Dr. G. C. Wittstein	Munich, Germany
Dr. Frederick Mohr	Bonn, Germany
Dr. Hermann Hager	Berlin, Germany
Dr. G. Dragendorff	Dorpat, Russia
Dr. Arthur Casselmann	St. Petersburg, Russia
Mr. Robinet	Paris, France
Mr. Bouilly	Paris, France

From the reports, the one on Progress of Pharmacy, written by C. Lewis Diehl, comprised one hundred and fifty-seven pages, more than one-third of the whole book. In this report, as well as in nearly all others handed in at this meeting, the word "pharmacist" is continually used in place of "pharmaceutist," but the official reading of the Constitution still adheres to the old name. The most remarkable report of the year was the report of the Committee of Drug

Market, signed by Daniel C. Robbins. It seems that Mr. Robbins was somewhat displeased with the condition of Pharmacy in the United States, and this spirit of dissatisfaction and unfavorable criticism pops out more or less in all parts of the report.

The first part again reviews the different terms and compares the words "druggist, chemist, apothecary, pharmacist and pharmaceutist" coming to the conclusion that

"the two words, 'druggist and pharmacist,' will probably come into general use, the one as the most fitting term for all dealers in druggists' articles, and the other, as the only word, unless we invent some new one, that can include a knowledge of combinations of all kinds, chemicals, and what we call compatible combination, for the want of a more precise term, the first implying a knowledge of the laws of chemical affinity, and the last, a knowledge of those controlling forces which crude material substances exert over each other in determining combinations. A good chemist may not understand pharmacy, but an accomplished pharmacist must understand chemistry, but hence while we cannot define pharmacy as we can chemistry, we must accord it a superior position, from the fact that the greater includes the less."

After deploring the want of respect for most of the professions in the United States, he makes a strong plea:

"But we must remember that it is not good for us to be forever in the chamber of suffering or always attendant on death, no constitution can endure it and no pursuit can stand it; we *must* renovate ourselves, *must* fill our empty shelves; the apothecaries *must* go out anew into life and catch the beat of its pulse forever renewed, and fill themselves with all the light of the day, take a look at the ocean of life and feel the breath of its sea.

"What we most want is a just estimate of ourselves, of our resources, of our obligations; and the true policy of the druggist and pharmacist is, to make his pursuit or his profession as useful as possible in all ways. We do not want less range, but more education, more character, because in our pursuit, more than in any other, there is a demand for character in the individual, for quality in the article, and for a better standard of morals in trade."

Mr. Robbins then goes into a classification of drugs and chemicals and favors greatly the French method in preference to the German or the English. Then comes a long record of the imports and exports of drugs of the United States, which more or less are based on the wants of the wholesaler than the retailer. He regrets that it is almost impossible to get pure drugs of any kind, and becomes more severe when he speaks of secret remedies.

"It is generally conceded by our apothecaries that about one-half of all their sales, in amount to customers is derived from this source, and if it were possible to obtain reliable statistics of the per capita or total consumption of these compounds within the Union, the American people would wake, and put in chains a traffic that panders to many vices, that seldom hesitates to any imposture, and as a rule considers the deception of the public to be a legitimate business." And again he says, "The proprietor of a secret remedy should have no more right to protection under the law as applied to trade marks than the freebooter of the ocean has to protection under the flag which has been so long recognized as the mark of his trade, and of the poison bottle; but we want a law to confirm this. The secrecy of any medicinal preparation should be *prima facie* evidence of fraudulent intent."

The report closes with a complete list of importations, giving the quantity, value and duty and the revenue, and advocates the cancellation of all revenue laws and inspection of imports.

It can easily be understood that a report of this kind caused some discussion and gave rise to a great many remarks. While, in a general way, Mr. Robbins was supported by the older members of the Association it was yet thought that his language in some places was too strong and that his demand that all drug laws should be repealed could not be well supported by the entire Association.

It was pointed out to him that the desire to have drug laws gave rise to the formation of the Association, and that no other body of men in the United States had been more active in inducing Congress to enact these laws than the American Pharmaceutical Association. Now to demand that all these laws be repealed would be to annul the whole history of the Association, and even if some of the laws were bad or badly executed,—if some of those entrusted with their carrying out had proven to be dishonest, and turned them to selfish purposes,—it must yet be admitted that an enormous amount of good had been done by these laws and that the demand for their repeal would not be in harmony with the history of the Association. After a lengthy debate the matter was referred to a committee under the chairmanship of Mr. W. A. Gellatly, who later on brought in the following resolution, which was adopted:

"*Resolved*, That in accepting the valuable and interesting report of the Committee on the Drug Market, this association does not endorse the portion referring to the utility of the law requiring the examination of foreign drugs before entry at the custom house (a law intimately connected with the origin of this body), believing that, however imperfect the law may be, its comparative fruitlessness has mainly arisen from the inability and unfitness of the agents appointed to execute its provisions."

Another very interesting report was that of the Committee on Legislation, regulating the practice of pharmacy, consisting of the President and other officers of the Association.

The report comprised forty-one pages and gives a complete history of the various legislations in the States as enacted at that time. It also gives a history of the various colleges, of the Boards of Pharmacy and their method of examination and their appointments. It then touches the question of adulteration and poison law; illicit selling and handling of liquor in drug stores and gives a number of letters from representatives in Congress, judges, and other members of importance, with reference to this matter. It finally offered a resolution:

"*Resolved*, That the President and ex-Presidents of this Association, attending this meeting, be appointed a committee to take into consideration,

"First, The propriety of drafting a law regulating the entire practice of pharmacy, to be presented to the legislatures of the different states and territories for their adoption, together with a memorial setting forth the duties of the profession to the public, and its actual and contemplated status;

"Second, The propriety of inviting the co-operation of the American Medical Association, and of the local Medical and Pharmaceutical Societies;

"And that the committee thus appointed be requested to report at a subsequent session."

After some debate the resolution was adopted without the second clause. Later on a new committee on the same subject was appointed by the President consisting of William Wright, Jr., of New York; Frederick Stearns, Detroit; J. Faris Moore, Baltimore.

It seems that the Association missed one great chance of usefulness in not taking up this question in a broader and more general sense. It is well known that since those days the physicians have applied to the legislatures and Congress for laws helping them in their practice and strengthening their position in the community and in law. If the pharmacists in those days had also undertaken to make pharmacy legislation a national issue, many of the difficulties that later

on arose and a good deal of the indifference that was shown in later years in various states towards the working of the American Pharmaceutical Association could now have been avoided.

From the many papers of a scientific nature that were presented at this meeting, we will mention the paper on "Commercial *Hydrargyrum Cum Creta*," the first paper read in the Association by Joseph P. Remington. Mr. H. W. Lincoln read an interesting paper on the Coat of Arms of Pharmacists, called "*Opiferque Per Orbem Dicor*"—(And I am called a bringer of help throughout the world.)

A very interesting and exhaustive paper was that of Dr. E. R. Squibb on "Carbolic Acid," at that time a new and almost unknown article. It strikes us to-day in almost a humorous way to notice in the debate that one member praised carbolic acid as a great invention, as a solution of it had cleaned his dog of fleas, while another one claimed that he had used it in the same way and found it entirely useless. Other papers related to the practice of pharmacy, the prescribing and preparation of various drugs, syrups and elixirs. They all showed a deep interest taken in this work all over the country and present a valuable record of the history of various preparations.

Mr. Parrish in a paper on "The Means of Improvement for Young Pharmacists," who were prevented from attending college, lays down three rules which will give them ability to practice their profession.

"First. Observation—The cultivation of the senses of sight, touch, taste and smell is of prime importance to the pharmacist, as it is indeed to every dealer in merchandise.

"Second. Experiment—The little word 'try' conveys a lesson which every one should learn at the very outset of his course.

"Third. Reading—Blessed agencies are good books in every scheme of education. What wonderful facilities for improvement do these furnish in the present day, as compared with any previous period."

The proceedings of this meeting, comprising about five hundred pages, is one of the most interesting and instructive books of the series. The observant reader, however, cannot avoid two general impressions. The first, the tedious and somewhat clumsy way in which the business of this now national Association is conducted, and what an enormous amount of time is wasted in reproducing and reading of reports that were of no use to the members and other unnecessary formalities. That a change in the method should soon take place is evident. Another impression of a more serious nature is that, sooner or later, dissension or difference of opinion of serious kind, must break out in the Association. The time of construction and building-up had almost passed. So far there was nothing but friendliness and the desire to accommodate each other's opinions, but the time had come when it would be necessary to step out, speak sharply and define the proper and most important objects of the Association in clear and precise words. Mr. Parrish, in one of his remarks, says: "We started out on a different basis from that in which we now conduct the Association. The ideas of those who originated it were more restricted in regard to membership and many other questions." Through the whole proceedings there go the rumblings of a distant thunder, announcing the storm that was soon to come.

The seventeenth meeting of the Association was held at Chicago in 1869. President Parrish being absent, the First Vice-President, Ferris Bringhurst.

presided in the first half, and the newly elected President, Ezekiel H. Sargent, at the second half of the meeting. There were one hundred and thirty-one members present at this meeting and many new members were elected, among them George W. Kennedy of Pottsville, Penn., who afterwards, was for many years the Secretary of the Council.

The report of the Committee on Progress of Pharmacy was presented by Dr. Hoffman, and while in a general way it follows the method of the former reporters, it differs particularly in so far as Dr. Hoffman added at various points criticism and suggestions. The report contains one hundred and sixty pages, being more than one-third of the volume and shows an enormous amount of zeal and arduous work. At the end, the reporter makes a strong appeal to divide the work among several members, claiming that it was too much for one. The Business Committee, in consequence of this suggestion, proposed a resolution making the committee to consist of three members, to be elected every three years and to divide the subjects among them, also that the report of the committee, in addition to being printed in the proceedings, should be published separately in book form. No action was taken on this proposition.

At this meeting, the most detailed and interesting report on the Pharmacopœia, was presented by Dr. Squibb. It embraced forty-eight pages and was an exhaustive review of all the enormous investigations and examinations that had been made by members of the Association and others, tending to improve the methods of the Pharmacopœia. Many articles were recommended to be dropped and others to be added, and the report bristled with many suggestions to the physicians in reference to the method and way of conducting the revision. As the Association was not an incorporated body at that time, this report could not be presented as coming from the Association, which had no representation in the Convention, but it was ordered to be printed, and no doubt had an important influence with the members of the Revision Committee.

The report of the delegates from this Association to the third International Pharmaceutical Congress held at Vienna this year was presented by John Faber, the only one who attended this Convention. It treated to some extent on the same questions as the previous one, and the following resolution, being the third one is of particular value:

"That the superintendence of the medical profession is incompatible with the present status of pharmacy, the pharmacist of our modern times being beyond what he was a century ago, and that he is entitled to self-government."

The 4th question, "Which way is to be adopted in order to obtain the most possible uniformity in the formulas and preparation of methods universally used?" was a continuation of the question about a universal codex. Faber reported as follows on this:

"A committee at Paris being engaged in working out a conspectus containing the different formulas of active remedies, with the view to have the Pharmacopœia of the different countries adopt uniform formulas in course of time; Congress expressed wishes for the committee to continue their labor in this direction, and to communicate with other pharmaceutical corporations about that subject."

The president in his annual address, which was a very able review of the activities and growth of the Association during the last year, dwelt at length

on the law to regulate the practice of pharmacy in the different States of the Union and to prevent the adulteration of drugs and medicines. He says:

"I cannot too highly commend this law to your serious consideration. Originally opposed to any attempt to prevent by legislation the evils which are so perceptible under our present unrestrained system, I have gradually arrived at the conclusion that the effort should now be made to exhibit to the legislatures of the several states such a law as, if it could be carried out, would be of immense advantage to the public, and would at once place pharmacy in its true position. The committee are aware of some imperfections in this draft, although it is the result of much careful study. I confess to grave doubts of its proving available in states in which our profession is not well organized."

His recommendation to fix the salary of the permanent secretary at $400.00 and that of the treasurer at $200.00 was later adopted. The Committee on Drug Market failed to bring in a report. The Business Committee recommended a number of changes of the Constitution, most of them relating again to the vexed question of raising funds. All the propositions and remarks relating to this subject were referred to the Committee for further consideration. This Committee prepared a lengthy report which was accepted and was to be acted upon at the following meeting in 1870. A great number of very interesting and instructive papers were presented at this meeting, most of them showing the great interest that the druggists of those days took in the investigation and determination of indigenous plants and articles of the Pharmacopœia in general. At this meeting also Mr. E. L. Milhau presented the first gelatin-coated pill and read an interesting paper on the same which was listened to with great interest and caused a very animated debate.

The two most important subjects, however, that made the meeting of 1869 a very remarkable one, were the reports of the Committee on the Law to regulate the practice of Pharmacy, and the expulsion of one of the most active and highly respected members of the Association.

Mr. W. Wright, Jr., as Chairman of the Committee charged with framing a law regulating the practice of pharmacy, reported verbally, that the Committee had attended to that duty and had the draft of the law printed in sufficient numbers to be distributed among the members present.

This draft of a proposed law which was printed in the proceedings is a very comprehensive and deep draft of a general pharmacy law. It is true there were some errors in it owing to the novelty of the work and the lack of experience of which the drafters of a later law of a similar kind could dispose, but it showed the deep thought and care that had been devoted to this work and would have been a good and serviceable model for the many State laws that were about to be formed and enacted in those days. It was hailed by some as the beginning of a new era, but it utterly failed of acceptance on account of the strong opposition of Dr. Squibb and a few of his friends who looked upon it from the standpoint of a physician, forgetting entirely that they were there as members of a Pharmaceutical Association and that the interests of the pharmacists should count first. At no other place in the proceedings, was the influence that Dr. Squibb exercised in those days at the Association, more pronounced than at this one, and while his remarks and his action do not detract at all from his reputation and great recognition as a pharmacologist, it is to be regretted that the older members of the Association did not muster courage

enough to oppose him in this one matter. It appears, to the historian, that the Association, in this one instance, missed its vocation. One of the greatest chances or possibilities to do good for American Pharmacy, was allowed to slip by, on account of this opposition and instead of framing a strong and forcible model-law for the various states, weak, compromise resolutions were passed.

These are some of Dr. Squibb's words with reference to this law:

"The pharmacist's vocation is entirely supplementary to the vocation of the physician; yet, here is a law that ignores physicians, and does not recognize the physician's diploma as entitling him to practice pharmacy, or to register as a pharmacist, while he is the only competent authority of the pharmacist and uses the medicines which the pharmacist prepares. I am willing to admit that the pharmacist knows more about preparing and compounding medicines than the physician does—not more than he should, but more than he does; that the pharmacist is the abler of the two in his profession, but that can never change the fact that the pharmacist is naturally and properly subordinate to the physician."

There were two ways open for the Association at that time, if they had understood the importance of the subject before them. They should either have come out boldly in direct opposition to the physicians, claiming that theirs is a profession of equal value and equal importance and that they were ready to deny and fight the assumed superiority of the medical profession or they should have made a strong and honest attempt to work in harmony with the physicians, who at that time were also framing new laws for their profession, and thereby make this harmony of the two professions one of the fundamentals of all new laws relating to medicine and pharmacy. The first standpoint was advocated by a number of members present at this meeting and from their remarks there can be no doubt that the animosity between pharmacists and physicians was much stronger and more pointed in those days than at any other time. It would have provoked a serious fight between the two professions, which however, would have resulted in the end in mutual respect and friendship.

Another way would have been to meet the physicians as friends and fellows. It is true many of them would have laughed at such an idea of recognizing a pharmacist as their equal, but those of better education and understanding, would have accepted the hand of friendship; laws would then have been framed far superior to those with which most of the States have struggled along, and by which the pharmacists failed to obtain the respect and acknowledgment of the public and medical profession. Looking back to those days, we now know that the physicians succeeded, for instance, in presenting their claims to the authorities of the army and navy, and that the highest physician in the army has the rank of General. If Pharmacy had joined Medicine in those days, we might to-day have a chief pharmacist with the rank of a Captain or Colonel. But the opportunity was lost, for the importance of the subject was not recognized and in place of presenting a working model law, resolutions of the following type were adopted:

"*Resolved*, That the difficulties of constructing a form of a law proper to be endorsed and recommended by this Association for general application in all states, are such that we must be satisfied with enumerating the broad principles which in our judgment should direct all legislation upon this important subject.

"*Resolved*, That we see with alarm and regret the rapid increase in the number of accidents which occur from mistakes and mismanagement in dispensing medicinal substances, and that we earnestly desire to see these casualties checked and controlled."

A compromise law was also adopted and it was resolved to send a copy of same to the governors of the different States of the Union.

The second great subject that came up at the meeting in 1869 was the proposition to expel Mr. Frederick Stearns, an ex-President of the Association, an active member at all the meetings and a man of the highest standing among pharmacists and the citizens of his home. Mr. Stearns had brought into the market a medicine for which he had adopted the name of "Sweet Quinine." The medicine, however, did not contain quinine, but cinchonine. The label did not state that it contained quinine, nor was the claim made, anywhere in the circulars, that the medicine contained quinine, the word "cinchonine" with an addition of being a good substitute of quinine was always used. In his explanation Mr. Stearns stated that he had adopted the word "Sweet Quinine" after long and careful consideration. That the medicine contained an alkaloid of the same tree, that the public did not know anything about cinchona, but knew what quinine was and that therefore it was no offense against ethics to use this word, particularly if all the circulars stated what the medicine contained.

The leading men of the Association, however, construed this offence as a direct violation of the code of ethics and claimed that he willfully practiced sophistication and fraud. It will be seen that the question simply turned on the value that is attached to the trade-mark as such. It is well known that in those days, and even afterwards, tradesmen of all kinds hunted for proper and catching names for their products, and it was not generally supposed to be necessary that the name of a trade-mark should be that of its contents. The debate which took place when the proposition to expel Mr. Stearns was brought forth, is one of the most interesting and touching readings of the proceedings of the Association. Everywhere the great service that Mr. Stearns had rendered the Association, his high virtues as a man, his amiability and faithfulness as a friend were extolled,—but he had not been ethical. The address that Mr. Colcord, this old veteran and stern representative of high professional ethics, made at this occasion is apt to bring tears to the eyes of even those that knew nothing of the intimate and true friendship, that up to that time, had existed between the two men. It reminds us of the deep patriotism and stern determination of Brutus when he plunged his dagger into the heart of his foster father; "Not that I love my friend less, but that I love Pharmacy more."

Mr. Stearns could have cleared himself easily if he had made the promise to discontinue the sale of the medicine; but he declined to make any promises. He too, was a man of high honesty and stubborn convictions. He said: "Judge me by what I have done, not by what I promise," and so he was expelled. The Association lost one of its most faithful and active members. During the fifteen years of his membership Mr. Stearns had, at every meeting, helped to uplift Pharmacy, to advocate what was good or right; he was no idealist or enthusiast like Colcord or Parrish; he went about the elevation of Pharmacy with a practical mind and his services were recognized by the Association by electing him to the highest honor of President. That we think more mildly of these things to-day is shown by the fact that he was elected a member some years later and it also shows how deep-rooted his admiration and love for the American Pharmaceutical Association were, when a year or two before

his death, as a successful and wealthy business man he again asked to become a member.

The charge has been made that the foundation of this action lay in commercial competition and envy, and that Mr. Stearns's success prompted a leading man from New York to present these resolutions. But how carefully the reader may look for any proof of this charge, it cannot be shown nor supported by records as they appear in the proceedings.

The question has often been asked why the Association was so severe with one of their best members, and many reasons more or less unsatisfactory have been assigned to this action. The real cause for this severity, however, lies in the peculiar psychological forces that sometimes move the human mind. Every leading man at that meeting felt that the action with reference to the pharmacy law, was unworthy of the lofty standing of the Association. There was that unconscious feeling that a mistake had been made, and that they had failed in the high vocation of the Association. Now, they wanted to assuage this feeling of dissatisfaction by being the severer in the following action. This swinging over, from leniency to severity, and the impression that an error committed in one direction, might be pardoned by extreme methods in the other direction is a human experience, not to say frailty. It shows itself daily in the individual, it appears in societies, in nations.

The history of the great men of the ancient Grecian republics is full of such sudden changes from admiration to contempt, from exalting to condemning. We, too, have had many instances of it in our own history. The treatment of the hero of Manila in the last Spanish war furnishes a good example. If the proposition made and earnestly urged by some members to censure Mr. Stearns and lay the matter over for a year had prevailed, Mr. Stearns would not have been expelled. The psychological excitement would have worn off and a cooler and quieter judgment been passed. But no matter in what light the individual may consider this action of the Association, it established one great fact, the importance of which overshadows everything else, and it is for this reason that your historian has given this subject so much time and investigation. The expulsion of Frederick Stearns impressed a character on the American Pharmaceutical Association that has not been effaced 'til to-day and never will be effaced. It declared to its members, to the pharmaceutical profession, to the whole world, that strict adherence to pure ethical honesty was its leading and most important feature; that neither long and faithful service, nor success in business, nor personal friendship could interfere with this principle, and that no sacrifice was too great to uphold it. The Association was here put to the most crucial test in its history, the temporary disagreement nearly disrupted it, but it came out of the severe trial victorious, purer and stronger. That the expulsion cast a gloom over the meeting, can easily be understood, and the next day, without further business of any importance, the members adjourned to meet again in Baltimore in 1870.

It must be considered a fortunate incident for the Association that the following meeting in 1870, the eighteenth, became more than anything else a business-meeting, under the influence of the excellent address of the President Ezekiel H. Sargent. He reviewed the affairs of the Association, not only the financial ones,

from the standpoint of a cool, sober, business man, eliminating from his address everything that might look like visionary ideals or enthusiasm. This was fortunate in more than one way; for it turned, for once, the minds of the members from the pursuit of scientific matters and a conception of their high vocation, back to solid facts and put before them the affairs of their work, their efforts and their hopes in sober and concise, even if dry, language.

Through the President's influence, the Association escaped the fate of so many noble and great enterprises, that they lose touch with reality, and, in the pursuits of high and lofty aims, forget the demands and cold facts of common life. President Sargent made a great many recommendations, the majority of which were accepted in the course of the meeting. For instance to supply money for the Committee of Progress of Pharmacy to purchase necessary journals; to create a new committee on adulteration and sophistication, consisting of such rising and enthusiastic men as Joseph P. Remington, Albert E. Ebert and William T. Wenzell; to have a general index of the proceedings of the last decade compiled; to direct the President to appoint authorized agents in the different States for the propagation of the Association; to appoint a Committee to take into consideration the invitation of the International Congress of Pharmacy to meet in the United States in 1876; and to create a committee of five on legislative action in pharmacy and the drug trade in general.

But the most important action of this meeting was the thorough revision of the Constitution and the providing of funds to put the Association on a firm financial basis. This new revision of the Constitution differed from the old one in many points.

It is this revision of the Constitution which, in essentials prevails to-day. Many changes became necessary through the growth of the Association and the establishment of different sections. An exchange of greetings with the Pharmaceutical Conference in England, that met at the same time in Liverpool, took place and an address was also sent to the North German Apothecaries' Association that met in the same year in the City of Dresden.

In the nomination and election of President, for the first time a break was made in the accustomed habit of selecting a new president from the place of meeting. Mr. R. Stabler of Alexandria, Virginia, was nominated and elected for the nineteenth meeting which was to assemble in St. Louis in 1871.

The committee on unofficial formulas was continued and Professor J. Faris Moore appointed president.

Among the many new members who joined at this meeting we notice the name of Charles Rice of New York, who afterwards became such a shining light of the Association.

The report of the committee of Progress of Pharmacy by Dr. Frederick Mahla, was as usual about one-third of the proceedings, and was a worthy continuation of the preceding ones. The committee on legislation in pharmacy in the different States, which had been continued from the previous meetings, reported the enactment of laws in the States of Rhode Island, Maryland and Pennsylvania and while these laws must be hailed as a decided progress in the development of pharmacy, they yet fell short of what they might have been, for reasons stated before.

Although this meeting was principally devoted to practical purposes, there were a long series of excellent papers by some of the leading men of those days. Mr. Joseph P. Remington read a very interesting paper on "Glycerin;" Mr. Squibb again reviewed the process of making fluid extracts and also continued his investigation on Rhubarb. His remarks on the manufacture of "Chloral" were highly interesting and received with great favor. Mr. Diehl pointed out that the indigenous drugs collected in the various parts of the Union were all shipped to New York; that it was sometimes impossible to find goods in Louisville that had been collected in its immediate surroundings and that much difficulty and delay was caused by this. Another paper devoted to "Medicinal Plants of Canada" was that of William Saunders. William Procter, Jr., read a very interesting treatise on "Morphiometric Process for the Pharmacopœia." He reviews the different methods proposed by different investigators and while his investigations lack that perfection which this work has attained at the present time, it yet showed a remarkable progress since 1862, when the committee reported that it was nearly impossible to make such investigations.

It had been customary since 1863 to add to the proceedings a short report on the social features of the Association, a custom that is continued to the present day. Another report that was handed in every year in those days, was a report on exhibits and specimens. It is to be regretted that the interest in this part of the annual meeting has disappeared, and that for many years such exhibitions have not taken place. The reason for it, if the historian is correct, is that these exhibitions took the feature of strictly commercial enterprises, while, in the beginning, specimens of all kinds of indigenous and foreign drugs, samples of rare plants, chemicals of special appearance or combinations, in fact, articles that tended to instruct and educate, were the main features of these exhibitions. The efforts to display living plants collected in the vicinity of the place of meeting that have lately been made, are good substitutes for these old exhibits and it is to be hoped that through their influence, the exhibits of educational subjects will gradually be revived. It was customary in those days for the Association to adjourn at a certain time that was fixed beforehand, for the purpose of visiting the exhibits.

With this meeting the second part of the history of the American Pharmaceutical Association may justly be closed. There is a remarkable difference between the first and the second decade. In the first part the minds of the members soared on high. The meetings were conducted by their founders and the lofty ideals which had prompted these noble men to found the Association, were the leading inspirations of the meeting. The great political upheaval in the beginning of the "60s" naturally checked this ideal tendency in many respects and plain business considerations and sober thought took their places. This condition of affairs far from having injured the Association, was of enormous benefit and gave it strength and firmness. It was now not only well known and established in the United States but it had created attention and congratulations in other countries and it had boldly reached out for the International Congress of Pharmacy to be held on this hemisphere.

Another good feature in the development of the Association must be noticed

The old members who founded the Association were not jealous of the younger; with pride they saw the young men come in, they welcomed them cheerfully, they willingly gave them an opportunity to show their mettle and take active part in the workings of the Association. We have, therefore, in this decade, the first papers, the first words of mental individuality and scientific thought of so many new men, and it is a pleasure to notice how their sometimes impetuous and radical desires, were wisely checked and guided by the older men without any desire or effort to suppress their individuality.

Thus the Association was ready to reach out further and do greater and nobler work.

JOHN B. BOND, M. D.



Doctor Bond, the Chairman of the State Board of Pharmacy of Arkansas and a member of the American Pharmaceutical Association since 1883 attained the ripe age of seventy-eight years in November. He was born at Gettysburg, Pa. in 1836, but made an "early escape,"—as he gleefully terms it,—to Missouri where he was educated and grew to manhood. His early life was spent upon his father's farm, after which he "tried his luck" in California for three years. He then returned to Missouri and joined the Confederate Army being attached to the Medical Corps of the Division of General Sterling Price, his qualifications for that position being that he had studied medicine in the St. Louis Medical College, now known as Washington University. He attained the rank of Chief Surgeon of Little's Division, Price's Corps, then serving in Mississippi, and while acting as such officer, he saw General Little receive his death-wound at the battle of Iuka. Soon after this lamentable episode, Dr. Bond was made Medical Purveyor on the staff of General Holmes, and was assigned to duty in Arkansas. Here he met "his fate" in the "Belle of Little Rock," whom he espoused, and thereupon transferred his citizenship from Missouri to the "Bear State."

At the close of the Civil War he practiced medicine until 1872 when he embarked in the drug business, being the senior member of Bond's Pharmacy Co. of Little Rock.

He occupied the Chair of Chemistry of the Medical Department of the University of Arkansas for three years.

He was one of the organizers of the Arkansas Association of Pharmacists and was prominent in the enactment of the Arkansas Pharmacy Law, which is considered a most equitable and satisfactory law for a frontier state requiring but some additions concerning the enforcement of the law to make it a model one. For twenty years Dr. Bond has been the President of the Arkansas State Board of Pharmacy.

Section on Education and Legislation

Papers Presented at the Sixty-Second Annual Convention

MINUTES OF THE SESSIONS OF THE SECTION ON EDUCATION AND LEGISLATION.

FIRST SESSION.

The first session was called to order by Chairman Craig at the Hotel Pontchartrain on Wednesday morning, August 20th, at 9:30 a. m.

The first business being the reading of the Chairman's Address, Mr. Marshall was requested to take the Chair during its reading. [Chairman's Address printed in this issue.]

On motion of Prof. Sayre, seconded by Mr. Richardson, the address was referred to a committee of three to report thereon at this meeting; said committee to consist of Prof. Day, and Doctors Ruddiman and Wilbert.

Chairman Craig resumed the Chair and called for the Secretary's Report. Secretary Freericks read his annual report. [Printed in this issue.]

On motion of Mr. Mayo, seconded by Dr. Wilbert, the report was referred for publication, and the thanks of the Section were extended to the Secretary for his able and comprehensive report.

The Report of the Special Committee on Postal Regulations for the Mailing of Poisons was presented by the Chairman of that Committee, Mr. Mayo, and on motion of Prof. Day, seconded by Mr. Weinstein, the report was accepted and referred for publication, and the committee was discharged from further consideration of the subject.

Papers were read by Mr. Frank R. Eldred and Dr. Wilbert upon the proper enforcement of Drug Laws, both of which papers were referred for publication. [Papers printed in this issue.]

Mr. Mayo presented a resolution opposing the taxing of proprietary medicines. The motion was seconded by Mr. Wallace, and was adopted and referred to the Council.

Chairman Craig read a paper by Dr. Jacob Diner, on Pharmaceutical Education, and on motion of Mr. Mayo, seconded by Mr. Bodemann, it was referred for publication.

The report of the Syllabus Committee was read and on motion of Mr. Weinstein, seconded by Dr. Stanislaus, the report was received and approved and the recommendations therein made referred to the Council for action.

On motion of Mr. Richardson the Section adjourned.

SECOND SESSION.

The meeting was called to order on Thursday morning, at 9:30 a. m., by Chairman Craig. The reading of the minutes of the previous meeting was dispensed

with. Nominations for Officers of the Section were made as follows:— For President, Matthias Noll of Kansas, and Frank H. Freericks of Ohio; for Vice-Chairmen, Prof. Zada M. Cooper, and Messrs. W. S. Richardson and George B. Topping; for Secretary, Prof. R. A. Kuever of Iowa.

The Committee on National Legislation made its report through its Chairman, Mr. John C. Wallace. On motion of Prof. Sayre, seconded by Dr. Rusby, the report was accepted and referred for publication.

Prof. Arny moved that the recommendation to approve the principle of Price Standardization be referred to the House of Delegates. Mr. Freericks moved to amend by adding the words, "be referred with the approval of this Section." The motion as amended was adopted.

The report of the Delegates to the Drug Trade Conference was presented by Chairman Wallace. [Printed in September, 1914, issue.] On motion of Dr. Anderson, seconded by Prof. Arny, the report was accepted and adopted and the recommendation that the Association continue its membership in the Drug Trade Conference was approved.

An open discussion was then held upon the question submitted by Chairman Craig:— "The necessity of getting representation of the various interests embraced in the Association, in the consideration of Legislative Matters." This discussion was opened by Secretary Freericks, and participated in by Messrs. Sayre, Woodruff, Wallace, Anderson, Weinholt, Abbott, Arny, Mason, Rusby and Jordan. On motion of Prof. Jordan, seconded by Mr. Weinholt, the entire discussion was placed upon the table, and a motion to have a part of the discussion printed was declared out of order.

Prof. Sayre presented the report of the Committee on Drug Reform, and on motion of Dr. Rusby, seconded by Dr. Anderson, the report was accepted and referred for publication.

Dr. Stewart presented the report of the Committee on Patents and Trade-marks. On motion of Mr. Bodemann, seconded by Mr. Richardson, the first part of the report was referred to the Committee on Proprietary Medicines, and the resolutions contained in the report approved. [Printed in November issue.]

Associate Chairman Marshall then assumed the Chair and the report of the Committee on President's Address was read. [Printed with Chairman's Address.]

Dr. Anderson moved the adoption of the Report. Motion seconded by Mr. Richardson, and adopted.

The following officers were elected for the ensuing year:—

Chairman, Frank H. Freericks; Vice-Chairmen, W. S. Richardson, Zada M. Cooper and George B. Topping; Secretary, R. A. Kuever.

The Section then adjourned.

THIRD SESSION.

Section called to order by Chairman Craig. In the absence of the Secretary, Mr. W. S. Richardson acted in that capacity.

Papers were read as follows:—

On Pharmaceutical Education, by Frank R. Eldred.

Comparison of Lectures and Laboratory Practice, by W. B. Day. [Printed in this issue.]

A Plea for a Higher Standard for Entrance to Pharmacy, by C. B. Jordan. [Printed in this issue.]

Comparative Advantages of Practical Experience and General Education as a Prerequisite for Instruction in Schools of Pharmacy, by Dr. Rusby. [Printed in this issue.]

Dr. Anderson offered a resolution in approval of the Harrison Bill, which was adopted by the Section.

Adjourned.

ADDRESS OF THE CHAIRMAN.

If one but glance over Article I of the Constitution of this Association, he will conclude that the founders of the organization builded not for a clearing house of pharmacal thought, but for a militant organization resistant to the evils that then threatened, and now more direfully threaten, the calling, and active to overcome the lethargy in regard to educational, ethical, and professional standards, that hampers pharmacal progress. They hoped for a protagonistic organization, not an association of mere proclaimers. Quite well, along many lines, have their ideas been advanced, but the progress has not been what an active membership would have made it. Discussion there has been in plenty and some action too. That there has not been more action is no fault of the organization; there has been lacking among the individual members, that spirit, the lack of which differentiates the American from the citizen of other countries, that spirit of seeing to it that law-makers and law-officers take care of the law, of seeing to it that this board, or that body, performs its duties as they should be performed.

Have you, or have I, pointed out the short-comings of boards of pharmacy as servants of the law? Have we endeavored to rid pharmacy of the man who we knew full well was a detriment to the entire calling? Have you, or have I raised any objection to the fraud perpetrated by the so-called "school of pharmacy" that graduates with a mark of 98 *per cent.* a young man who cannot write the full Latin name for epsom salt, or calculate the amount of a one-in-forty dilution of atropine sulphate required to make ten one-two-hundredth-grain dosages, or roll the corners off a pill? Have we not known the so-called "pharmacist" who would refill a prescription container from another pharmacy after smelling the receptacle and reading the label? Have we complained to the proper authorities concerning him? Have we exposed the druggist whom we knew was immorally, and perhaps illegally, selling narcotics? No; we have minded our own business—and let that business suffer from what really was neglect.

Along which of the two lines embraced within the purview of this section, education and legislation, we could achieve most for pharmacal advancement depends upon our bent and upon our environment. Legislation, to me, appears to be an over-exploited remedy for pharmacal ills. Education for pharmacists and for the public is of course a slower method of achievement and a method that requires constant attention; for public opinion, and pharmacal opinion as well

is evanescent—but education is a surer method; for, without education, legislation fails utterly.

There are so many problems in present-day pharmacy, that are being studied for solution along legislative lines, that they can merely be mentioned in an address that must necessarily be brief—a chairman, as I see it, should formulate and direct the program for his section, rather than occupy the greater portion of it. Others who will come before you will tell of the past year's endeavors to standardize all sorts of things from the shape of tablets of mercuric chloride to the graduations of nursing bottles. They will tell you how accroached rights and public welfare have clashed in the struggle against the drug evil; how the medicine pedler has practiced pharmacy, and the dispensing doctor has been above the law, a law apparently enacted for the protection of the public, but more evidently for the restriction of the pharmacist. When they have told you these things, do you, I pray, read the first article in your constitution and enlist in the endeavors that it purposes?

Let me call your attention to some educational needs of pharmacy; there are but two important among these. One important need is education; the other is educators. The need for education is two-fold. The pharmacist should be an educated man and the man in pharmacy should be an educated pharmacist Slowly but surely there is dawning in general educational circles the light whose rays were first focalized by Froebel, the light that shows that to do is to know; and sense-training is fast taking the place of memory-cramming in educational methods. Glad will be the day when this light illumines pharmacal education when the pharmacy student's thoughts are directed toward the real purpose of instruction, the imparting of that knowledge that constitutes education, and away from the examination at the end of the semester or the tests by the board of pharmacy; when he comes to look upon instruction as a means toward an end and not as an end in itself.

The preliminary education that the pharmacy student should have, has been standardized to a certain extent, but apparently it has been standardized for the sake of standardization rather than for the purpose of getting an educated pharmacist. Mathematics, physical science, introductory chemistry, logic—these are necessary in the foundation of any professional education. They are usually conspicuously absent from among the counts upon which the pharmacy student certificate is granted. None can be of service to pharmacy who is but crammed with learning and has not the initiative that is the first characteristic of education. Look over a lot of theses prepared by candidates for a degree in pharmacy, even for the doctorate: What initiative, what originality, do they indicate? The fault is not all in the teaching of pharmacy; much of it lies farther back in the educational life of the student; and pharmacal instruction has a difficult task in building a trained professional man upon no other foundation than a crammed memory

That there is a lack of efficient pharmacal educators is evident to any one who has any knowledge of educational methods and educational results. It is not enough that a man be an authority in his subject, to make him an efficient instructor of others. If he has not a thorough knowledge of human nature and at least a fair grasp of the psychology of imparting and receiving instruction, he

cannot instruct. The real teacher can tell through observation of the faces before him—he needs not wait for the examination to determine it—which, among his students, are memorizers, which miss the point of the instruction entirely, and which catch and fix the idea independent of the words in which it is expressed There is a need for trained educators in pharmacy and this Association should endeavor to remedy it.

Few of us have not heard criticism of the apparent divergence of the lines along which schools of pharmacy and boards of pharmacy, determine the fitness of practitioners of pharmacy. That there is a divergence is evidenced by some statistics collected by my associate, Mr. R. A. Kuever, which show that of 1,497 graduates of pharmacy schools, examined recently by seventeen boards of pharmacy, only 65.06 *per cent.* were passed. Can we say, therefore, that the schools of pharmacy are not doing their duty? Is it, on the other hand, that the boards of pharmacy are poor judges of pharmacal fitness? This is a question that this Association might well take under consideration. Some other figures collected by Mr. Kuever are interesting in this connection. He found that thirty boards of pharmacy examined five thousand three hundred and ninety-three applicants for registration in a given period and passed 54.55 *per cent.* Twelve of these boards had examined graduates, so-called, of short-course, or cramming, schools, to the number of three hundred and ninety-one. Of these 49.36 *per cent.* were passed. Evidently the regular school of pharmacy is a little better judge of pharmacal fitness (on a board standard) than is the cramming school. As far as Mr. Kuever was able to ascertain, there are twelve of these cramming schools that are well known this number does not include the correspondence-course institutions. These cramming schools are without standards; but they get half their students past the board,—and to pass the board is the chief desire of by far the greater number of pharmacy students.

There are many legislative problems upon which the chairman might base recommendations to this section, but I prefer to leave these to the several committees and delegations that have to do with legislative matters. Let me, however, suggest that you take an active part in the attempts to restrict the traffic in narcotics to moral lines, paying particular attention to the necessity for the restriction of physicians and especially veterinarians who are not amenable to very stringent laws of any sort; that you do not overlook the present-day opportunity to achieve a much-desired reform in our patent laws relative to medicinal products; that you leave not to the civic organizations the survey and regulation of the practice of pharmacy; that you coöperate in the conservation of real pharmacy; that you, in short, become protagonists for the purposes set forth in Article I of the Constitution of the American Pharmaceutical Association.

In the educational field, I would recommend: (1) That this Association create a committee to survey pharmacal educational methods.

(2) That this Association take steps toward the supplying of efficient pharmacal educators trained along pedagogic, as well as pharmacal, lines.

(3) That this Association interest itself in the modern movement toward the concrete and practical in general educational practices.

(4) That this Association concern itself with the coordination of the methods

of schools of pharmacy and boards of pharmacy, particularly that practical pharmacy may be conserved.

(5) That this Association take steps toward securing the better enforcement of the statutory provisions that safe-guard the practice of pharmacy.

As a topic for discussion at the meetings of state pharmacal organizations next year, I suggest this:— "Should the Ownership of a Pharmacy be Restricted to a Registered Pharmacist?"

Respectfully submitted,

HUGH CRAIG,
Chairman.

REPORT OF COMMITTEE ON CHAIRMAN'S ADDRESS.

Your committee, to whom was referred the address of Chairman Craig, takes this opportunity to express its appreciation of the excellence of the address, its admiration of the sentiments therein contained and its concurrence with the suggestion offered for the improvement of pharmaceutical education and legislation.

We endorse the recommendation that the Association use its best efforts to secure such restrictions of the traffic in narcotics that shall include all who are responsible for the abuses in the dispensing or sale of narcotics.

We endorse also the recommendation relative to the reform of our patent laws concerning medicinal products; likewise, the suggestion that pharmacists themselves should undertake the survey and secure the regulation of pharmacal practice, and not leave these vital matters to organizations which are non-pharmacal in character.

We believe that the survey of educational methods mentioned by our chairman should be carefully considered by this section, and, that a committee should be appointed to report a plan of classifying all the various institutions now engaged in giving instruction in pharmacy in this country.

We advise that the recommendation of our chairman concerning the coördination of the methods of schools and boards of pharmacy be made a subject for discussion and action at the joint session of schools and boards with this section and to the same joint session we would refer the recommendation that steps be taken to secure the enforcement of the statutory provisions that regulate the practice of pharmacy.

We approve of the chairman's suggestion of submitting a topic for discussion at the meetings of state pharmaceutical associations next year, and, we recommend that the secretary of this section communicate this suggestion to the secretaries of the various state pharmaceutical associations.

W. B. DAY,
M. I. WILBERT,
E. A. RUDDIMAN.

REPORT OF THE SECRETARY.

This report of your Secretary, in keeping with custom, will be largely devoted to legislative changes which have taken place during the year and to rulings and court decisions of importance. An effort has been made to compile some matter of possible historical and statistical interest pertaining to institutions of pharmaceutical learning, but owing to lack of response in some instances, this work as originally planned has not been fully completed, but it is nevertheless made a part of this report, so that if deemed of sufficient interest, it may be completed by some subsequent Secretary.

LEGISLATIVE ACTIVITY.

During the year, apart from the United States Congress, there have been legislative sessions in Alaska, Georgia, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, New Jersey, Rhode Island, South Carolina, Vermont and Virginia. In nearly all of these legislative bodies, bills were submitted which in one manner or another were of interest to pharmacy. Aside from the United States Congress laws pertaining to pharmacy were enacted only in Massachusetts, New York and Rhode Island. Since the scope of intended legislative activity was of a nature to cover a very broad field, it seems best that only actual enactments or such measures as are yet likely to be enacted, find consideration.

Massachusetts:—In Massachusetts a law was enacted to further regulate the sale of the important narcotics other than cocain, the sale and disposition of which was covered by an enactment of the previous year. A complete copy of this new Massachusetts law, is made a part of this report, because of its special interest.* An analysis of the new law brings out the following special features, which are not generally found in such legislation as proposed at this time. Preparations sold in good faith for diarrhea, cholera, neuralgia, may contain six grains of opium or three-fourths of a grain of morphin to the fluid or avoirdupois ounce. Dover's Powder and veterinary preparations containing not over ten grains of opium, or one and one-fourth grain of morphin, to the ounce, and compound medicinal tablets, pills and powders, containing not more than one-twentieth of a grain of morphin, or one quarter of a grain of codein to each pill, powder or tablet, are also specifically exempted, when distributed in good faith. Veterinarians are specifically prohibited from prescribing the drugs for human-beings, and Physicians and dentists are prohibited from prescribing the drugs for persons known by them to be habitual users. This last named provision is immediately qualified by another provision, which sets out that nothing in the Act shall prevent practitioners of medicine, dentistry or veterinarians, from prescribing or using the drugs whenever indicated for any patient, so long as it is not done to evade the provisions of the Act. Physicians, dentists and veterinarians are required to keep a record of the names and addresses of all patients to whom they dispense the narcotics. Persons who falsely represent themselves as physicians, pharmacists, or others legally authorized to secure the drugs are made violators of the Act. It will be noted that much was sought to be accomplished by this new law, but its spirit appears to extend far beyond its actual letter. The requirement upon physicians, etc., to keep a record of the names and addresses of patients to whom they dispense the narcotics seems of little value, because they are not required to state the quantity dispensed and the day of dispensing. The law seems to properly distinguish between dispensing and administration, for it is evidently not required that a record be kept of the drugs which are administered.

New York:—During the year New York has enacted three laws which are of special interest. One of these, known as the Boylan Law, like the Massachusetts Act already referred

* See appendix.

to, provides regulations for the distribution of narcotic drugs other than cocain, which is governed by an act of the previous year. Another, known as the Walters Law, governing hours of employment, and finally a new Trade Mark Law. The Walters Law provides separate regulation to govern work hours and employment in pharmacies and drug stores, as differing from work hours for employment generally, and seems to limit authority for the enforcement of laws governing employment in drug stores with the general authorities having in charge the enforcement of Pharmacy Laws.

The New Trade Mark Law makes the following a misdemeanor under heavy penalty.

"A person who shall knowingly sell, offer or expose for sale any article of merchandise, and shall orally or by representation, name or mark written or printed thereon, or attached thereto, or used in connection therewith, or by advertisement, or otherwise, in any manner whatsoever. make any false representation as to the person by whom such article of merchandise or the material thereof was made, or was in whole or in part produced, manufactured, finished, processed, treated, marketed, packed, bottled, or boxed, or falsely represents that such article of merchandise or the material or any part thereof has or may properly have any trade-mark attached to it or used in connection with it, or is or may properly be indicated or identified by any trade-mark, is guilty of a misdemeanor."

The law seems principally to be aimed at substitution, and within its provisions would undoubtedly be included the sale in bulk of articles which are sold from original containers and regarding which the practice of substitution may have been more or less prevalent.

The Boylan Law is intended to govern the sale of chloral, and of opium and its alkaloids, salts and derivatives. Because of its many important and new features, it is made a part of this report in its entirety. [The bill was printed in full in the Journal of June, 1914, P. 902. Ed.] The following provisions are deserving of special attention. Sales may be only on physician's prescription other than for preparations containing minimum quantities, and the prescription must contain the name of the physician, etc., his office address, office hours, telephone number, name, age and address of person to whom and date on which it was issued. Physicians may not issue a prescription to any person unless they first have made a physical examination of such person and then find the drugs to be indicated. Prescriptions containing more than four grains of morphin, thirty grains of opium, two grains heroin, six grains of codein, or four drams of chloral, must first be verified by communicating with the prescriber. Prescriptions may not be filled later than ten days after they have been issued. Persons filling a prescription must either issue a certificate or show on the label, the name and address of the persons selling. the name and address of the physician, etc., date of sale, and name of person to whom such sale is made. Possession of the named drugs by any person other than those legally authorized to handle them, is a misdemeanor, unless such possession is authorized by the certificate or label in question. Purchases and sales in the trade must be made on official order blanks furnished by the local Health Board, and such blanks can be had only by persons legally authorized to handle the drugs. Physicians, druggists, pharmacists, veterinarians and dentists must keep on record the name and address of each person to whom they administer or dispose of the drugs, together with the quantity so disposed of or administered. Hypodermic syringes may be sold only on the written order of a physician or veterinarian, and a record of such sale must be kept. Provision is made for the commitment of habitual-users to hospitals or institutions which are licensed under the State Lunacy Commission. Provision is made for the revocation of licenses issued to physicians, dentists, veterinarians, pharmacists or nurses upon proof that the licensee is addicted to the use of habit-forming drugs.

It is not the purpose of this report to discuss to any extent the provisions of this new New York Law, but attention is called to the fact, that the requirement for a certificate to the purchaser or alternatively to show the same matter on the label would include the need for setting out the contents of the drugs named. The advisability of making this requirement may be doubted. The purpose of course is, to enable the possessor of such drugs to prove lawful possession, but, in actual practice, the purchaser for legitimate use is not apt to have preserved such certificate in case he should be called upon. To require physicians to keep a record of the drugs which they themselves may administer seems an unnecessary burden, while the requirement for them, as well as druggists, pharmacists, etc., to keep a record of name,

address and quantity dispensed or disposed of, places New York in the foremost rank of those states properly seeking to control the narcotic evil, that is, of course, if the law is to be extended in this respect to cover all narcotics.

Rhode Island:—In Rhode Island an amendment to the narcotic laws of that state was enacted, looking toward the better enforcement of said law. The amendment provides, as of special interest, that no person, other than a manufacturer or jobber of drugs, wholesale druggists, registered pharmacists or assistants, registered physicians, dentists, or veterinarians or others who under the law are entitled thereto, may possess the drugs, unless possession can be shown to be under a physician's prescription.

FEDERAL LEGISLATION.

During the last and present session of Congress an enormous number of bills have been introduced which are of interest to pharmacists. At this writing none of them have been enacted into law, but it is likely that, at least, some will become laws before Congress adjourns. Among the numerous bills introduced and pending may be mentioned those which would regulate the sale of bichloride of mercury; to provide price maintenance; to prevent unfair competition; the Hinebaugh Bill to tax mail order houses; in general, either amendatory or supplementary to the Sherman Anti-Trust Act; to amend the Food and Drug Act; the Hughes-Bacon Bill to improve the condition of pharmacists in the Army; to prevent fraudulent advertising; to regulate the use of trading stamps and coupons; to amend the present patent laws; the Harrison Anti-Narcotic Bill, and many other legislative proposals touching upon almost every activity in which the pharmacist is interested. It is to be regretted that no progress has yet been made in securing a law to improve the status of pharmacists in the Army.

Of the many national legislative proposals, it will be impossible to discuss other than a few of the more important ones, and among these must, of course, be considered, as of prime importance, the Harrison Anti-Narcotic Bill, the Price Maintenance Bills and the Trade Commission Bill, which includes a provision with reference to unfair competition. Aside from the Harrison Bill, it is impossible even at this time to discuss the various other specially important legislative propositions, because they are being changed almost daily in some form or another, so that it is quite impossible to know from day to day in what form they may be.

The various Price Maintenance Bills now pending in Congress are typified largely by the so-called Stevens Bill, known as H. R. 13305. During the past year most wonderful progress has been made in popularizing the idea of price maintenance and standardization, and the support which has been given to such measures from many different sources, gives ground to hope that the cut-rate evil, which has so sorely afflicted the retail drug trade of the country, will within a reasonable time be largely checked, if not entirely overcome. The Stevens Bill, which is the most popular along this line, would legalize contracts affecting Interstate Commerce, whereunder the original producer or manufacturer will have the right to prescribe the price at which his trade-marked or specially-branded articles shall be re-sold. It is rather noteworthy that this bill does not aim to include patent or copy-righted articles, unless it was thought that their inclusion might lessen the chances for successful enaction. With reference to trade-marked and specially-branded goods, the bill, and others of the same type, are undoubtedly designed to overcome the decision of the Supreme Court in various cases

which held such contract-control to be unlawful. Whether due regard has been given to Constitutional limitation may be a question for more thorough consideration. The intended legislation is framed under the Interstate Commerce authority of the Federal Government, and not under any special authority which the Federal Government has, with reference to trade-marked or specially-branded articles. The question, therefore, may arise as to whether Congress has the legal authority under the Interstate Commerce clause to make special provisions regarding the price of certain articles which enter Interstate Commerce to the exclusion of other articles or property which are also in Interstate Commerce. Whatever the requirement may be ultimately found to be with reference to this matter, there is but little doubt that in some form a measure can be properly framed. For the present, legitimate dealers throughout the country, which include the large number of retail druggists, can be congratulated on the enormous strides which have been made towards legalizing maintenance and standardization of prices. The outlook has never before been so hopeful.

The Trade Commission Bill, which is now pending in the Senate, known as the Newlands Bill, includes, as already stated, a provision against unfair competition, which has found expression in numerous other bills, all having the same purpose. It would seem that much good is looked for by many, to come from this proposed legislation, with particular reference to unfair competition. It is likely, however, that such possible good has been largely over-estimated. Unfair competition is an extremely broad term. It would be found, or not found, according to the state of mind of the person with whom the decision rests. When left for decision to a Commission, such Commission would be bound by the present status of the general law as defined in court decisions. In late years, court decisions, either directly or indirectly, have held certain practices, which the retail trade particularly claim to be unfair competition, as not being unfair. It would seem that any law which would control and restrict unfair competition, as we understand it, should define the practice which must be regarded as unfair, and in the absence of such definition, little, if anything, will be gained.

Harrison Bill:—Faulty features which were recognized by some to be contained in the Harrison Anti-Narcotic Bill have during the year been largely corrected. In the end, absolute necessity for making the record-keeping requirement applicable to physicians, dentists and veterinarians was also more generally recognized, and an amendment proposed which to a large extent will be helpful in correcting the early defect. On the other hand, these needed changes in the bill have served to make plain that the real opposition to effective and sufficient control over the sale and use of narcotics is found with some part of the medical profession and those who are allied with them. This opposition found expression in an amendment as offered by Senator Pomerene, which is intended to exempt the physician and others altogether from the operation of the proposed law. In just what form the Harrison Bill will now be enacted, it is not possible to say. It may not be enacted at all at this session of Congress, which certainly is to be desired if the law is not to contain a requirement for record-keeping equally applicable to all.

COURT DECISIONS, RULINGS AND REGULATIONS.

There have been a number of court decisions and department rulings and regulations which are of vital concern. Among them as of greatest importance reference should be made to the following:—

Itinerant Vendors:—During the year a decision of the Supreme Court of the United States on the Louisiana Itinerant Vendors Law, has attracted general attention. The decision is of importance. It was rendered in the case of Baccus vs. the State of Louisiana. It appears from a statement of facts, that the sale of drugs and medicines in any form by itinerant vendors is prohibited under the Louisiana Law. A number of defenses were set up under which it was claimed, that the act in question was unconstitutional, both under the State and under the Federal Constitution. The finding of the Louisiana Court was against the defense, and a conviction entered, and the case was then carried to the United States Supreme Court. Chief Justice White, rendering the decision for the Supreme Court, in substance merely found that the law was not in conflict with the Federal Constitution. It of course is a recognized fact that the police powers belong exclusively to the several states, and where a measure must be recognized as one exercising the police power, and is not altogether unreasonable, it cannot be declared unconstitutional under the Federal Constitution, after having been held constitutional under the State Constitution. While the opinion of Chief Justice White, contains expressions which would uphold the Louisiana Law, regardless of this limitation, the limitation, nevertheless, must be regarded as controlling. The decision of the United States Supreme Court in this case, really means, that it will not disturb the decision which may have been rendered by the highest court of the several states on a question of this kind. It will be remembered, that the Illinois Court of Appeals, held an Itinerant Vendor's Law of that state to be in conflict with the constitution of the state, and had it been possible to carry that decision to the Supreme Court of the United States, it is altogether likely, that it would also have been affirmed. Therefore, notwithstanding the decision of the Supreme Court of the United States in this case, it is optional with the State Courts of every state other than Louisiana, to reach a decision directly opposite to the one announced by the Louisiana Courts. It is likely, that the courts of most states will continue to hold, that an Itinerant Vendor's Law must be uniform in application, either in that it will apply to itinerant vendors of all kinds in like manner, or that its uniformity will be based on making a distinction between qualified and unqualified vendors, whether they be itinerant or not.

Saccharin Laws:—Legislation and rulings have been quite general to prevent the use of saccharin in food-stuffs and soft-drinks. A law preventing the use of saccharin in soft-drinks was lately held by the Missouri Supreme Court to be discriminatory, and therefore unconstitutional, because it was not made applicable to food-stuffs in general.

Insecticide Laws:—In Ohio an Insecticide Law of such wide scope as to include, practically, every drug which may be used as an insecticide or fungicide, and requiring special license and labeling has been successfully contested in the lower courts. The Ohio Commission, with whom the enforcement of this law rests, have averred that they had no intention to construe it beyond reasonable bounds, but the letter of the law certainly would permit them to do so, and a ruling by the National Insecticide and Fungicide Board of the Department of Agriculture, under the National Insecticide Act, with reference to peroxide of hydrogen, would certainly indicate, that there can be a disposition to extend the widest possible scope to such laws.

Philippine Formula Labeling Law:—A reference to this is possibly not appropriate under decisions and rulings, but it is of such importance as to deserve notice. This new Philippine Law will compel the labeling of all patent and proprietary medicines with their complete formulas. There seems to be some authority with the Department of State to modify legislation in the Philippine Islands, but without such possible modification, the law in question became effective July 1st.

The New York Health Department:—Some of the late actions of the New York Health Department, would indicate that said department is clothed with unusual powers. The action of this department in this respect, is of special interest, because it has amended the

Sanitary Code by prohibiting entirely the sale of preparations which contain the generally permitted minimum quantity of narcotics, and has also adopted an ordinance which prohibits the use of wood-alcohol in preparations of all kinds intended for internal and external use. One not conversant with the constitutional limitations which govern the New York City Health Department, can hardly understand the wide authority which it would exercise. Evidently, this department is the first one of those which seem to have legislative authority, to go so far as to prohibit the sale of preparations containing a very slight quantity of narcotics, such as paregoric, etc. The action of the Health Department is also remarkable in view of the Boylan Law just enacted in New York State, and wherein at least by indirection, preparations containing minimum quantities are exempted. If there are no constitutional limitations, which would prevent the New York Health Department from enacting such a provision, after the enaction of a general law by the State, then it must be doubtful as to whether there be any constitutional limitations to govern said Body.

Parcel Post:—The wide discretion and authority given the Postmaster General with reference to the Parcel Post Law, has already caused the extension of parcel post facilities beyond what Congress was willing to specifically provide. Even greater extensions appear to be contemplated, and the present Postmaster General seems to be willing to go far beyond the limits which would prevail, if Congress had retained to itself the power of extension.

Postal Laws Governing the Transmission of Poisons:—With reference to the use of mails for shipping medicinal preparations, postal regulations continue to be in an unsatisfactory state. Changes have been proposed both by the Drug Trade Conference and by the Drug Trade Section of the New York Board of Trade. The greatest difficulty in finding a proper solution for this problem, which has confronted the Postal Authorities, seems to rest in the fact, that a definition for the word "Poison" yet remains to be found.

Treasury Decision regulating the Importation and Sale of Cocain:—During the latter part of last year a decision was rendered by the Treasury Department under which it was sought to practically control the distribution of cocain and its derivatives, as well as coca leaves in all channels throughout the country inclusive of importation. Under the decision, every person desiring to secure the articles in question, is required to declare, that they are intended to be used in good faith, and in a manner not dangerous to health. The declaration-requirement appears so broad as to include even such declaration from a person receiving the drugs on prescription. The decision would appear to be an altogether impossible one beyond that part which governs importation. The Bureau of Chemistry, at an early time, announced that it did not find in the decision the wide scope which plainly appears to be therein, and held, that the requirement did not apply to distribution on physicians' prescriptions. While the decision may be enforced, as with reference to importation, it does not appear, generally, to have been extended beyond that point.

Guaranty under the Food and Drugs Act:—The three Secretaries having supreme control over the Food and Drugs Act and its enforcement, early in the year, rendered a decision to abolish the guaranty requirement to be shown on packages of food and drugs. This requirement is too well understood to need discussion. The order abolishing the requirement was first to become effective with May 1st, 1915, but a subsequent order was made postponing this to May 1st, 1916, and as to products already packed and labeled prior to that time, to November 1st, 1916. Under the change as proposed, guarantees are to be made on invoices, or in other manner apart from the product. While it may be true that the guaranty legend has been misused in the sense of causing misunderstanding and practical misrepresentation, there is no good reason for going from one extreme to another. To place the retailer in a position where he will be dependent upon his invoices, to prove that the responsibility rests with someone else, seems to be entirely uncalled for. In this connection it is to be noted, that many manufacturers most heartily approve of the new ruling. The thought has been advanced from different sources, that the danger of deception and misunderstanding, might be entirely avoided by abolishing the use of the word "Guaranty", and by making the requirement simply to show serial number under the Food and Drugs Act; requiring such exact wording as under the ruling, would be held equivalent to the Guaranty. Such method certainly appears likely to produce far better and more satisfactory results.

APPENDIX.

MASSACHUSETTS NARCOTIC LAW.

An Act to regulate the sale of opium, morphin and other narcotic drugs.

Section 1. On and after the first day of January, nineteen hundred and fifteen, it shall be unlawful for any person, firm or corporation to sell, furnish, give away or deliver any opium, morphin, heroin, codein, cannabis indica, cannabis sativa, or any preparation thereof, or any salt or compound of the said substances, except upon the written prescription or written order of a registered physician, dentist, or veterinary surgeon, bearing the name of the physician, dentist, or veterinary surgeon giving it, which prescription when filled shall show the date of each filling and shall be retained on file by the druggist filling it for a period of at least two years, and it shall not again be filled except upon the order of the prescriber, given in person or in writing. The prescription shall not be copied, except for the purpose of record by the druggist filling the same, and it shall at all times be open to inspection by the officers of the state board of health, the board of registration in pharmacy and its authorized agents, and by the police authorities and police officers of cities and towns. But the provisions of this act shall not apply to prescriptions, nor to the sale, distribution, giving away, or dispensing of preparations and remedies, if such prescriptions, preparations or remedies do not contain more than two grains of opium or more than one quarter of a grain of morphin, or more than one quarter of a grain of heroin, or more than one grain of codein, or more than one-half of a grain of extract of cannabis indica, or more than one-half of a grain of extract of cannabis sativa, or any salt or compound of any of them in one fluid ounce, or, if a solid or semi-solid preparation, to the avoirdupois ounce; nor to liniments, ointments or other preparations which are prepared for external use only; nor to preparations containing any of the said substances which are sold in good faith for diarrhea or cholera or neuralgia, and which do not contain more than six grains of opium or more than three quarters of a grain of morphin to each fluid ounce, or, if a solid or semi-solid preparation, to the avoirdupois ounce; nor to Dover's Powder; nor to veterinary preparations containing not over ten grains of opium or more than one grain and a quarter of morphin to each fluid ounce, or, if a solid or semi-solid preparation, to the avoirdupois ounce; nor to compound medicinal tablets, pills or powders containing not over one twentieth of a grain of morphin or one quarter of a grain of codein or any of their salts, except heroin, to each pill, powder or tablet; provided that such preparations, remedies or prescriptions are sold, distributed, given away or dispensed in good faith as medicines, and not sold for the purpose of evading the provisions of this act.

Section 2. It shall be unlawful for any practitioner of veterinary medicine or surgery to prescribe any of the drugs mentioned in section one of this act for the use of a human being, and it shall be unlawful for any physician or dentist to prescribe, sell, give away or deliver any opium, morphin, heroin, codein, cannabis indica, cannabis sativa, or any preparation thereof, or any salt or compound of said substance to any person known to such physician or dentist to be an habitual user of those drugs.

Section 3. The provisions of this act shall not be construed to prevent any lawfully authorized practitioner of medicine or of veterinary medicine or of dentistry, from prescribing, administering or dispensing any drug that may be indicated for any patient under his care; provided, that such prescribing, administering or dispensing, is not for the purpose of evading the provisions of this act; and provided, further, that every physician, veterinarian and dentist shall keep a record in a suitable book of the names and addresses of all patients to whom he dispenses narcotics.

Section 4. Any manufacturer or jobber and any wholesale druggist and any registered pharmacist, physician, veterinarian or dentist may sell opium, morphin, codein, heroin, cannabis indica, cannabis sativa, or any preparation thereof, or any salt or compound of such substances to any manufacturer, jobber, wholesale druggist, registered pharmacist, physician, veterinarian or dentist, or to any incorporated hospital; but such substances or preparations, except such as are included within the exemptions set forth in section one shall be sold only upon a written order duly signed by such manufacturer, jobber, wholesale druggist, pharmacist, physician, veterinarian, dentist or superintendent of such incorporated hospital, which order shall state the article or articles ordered and the date. The said orders shall be kept on file in the laboratory, warehouse pharmacy or store in which they are filled by the proprietor thereof, or his successors, for a period of not less than two years from the date of delivery, and shall be at all times open to inspection by officers of the state board of health, members of the board of registration in pharmacy, or their authorized agents, and by the police authorities and police officers of cities and towns.

Section 5. Any person who, for the purpose of evading or assisting in the evasion of any provision of this act shall falsely represent that he is a physician, dentist or veterinarian, or that he is a manufacturer, jobber, wholesale druggist, or pharmacist, or an agent or employee of an incorporated hospital, or who, not being an authorized physician, dentist or veterinarian, makes or alters a prescription for any of the said substances, shall be deemed guilty of a violation of this act.

Section 6. Whoever violates any provision of this act shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not less than fifty nor more than one thousand

dollars, or by imprisonment in the house of correction or jail for a term not exceeding one year, or by both such fine and imprisonment.

Section 7. Chapter two hundred and seventy-one of the acts of the year nineteen hundred and ten is hereby repealed.

Section 8. This act shall take effect on the first day of January, nineteen hundred and fifteen.

SOME FACTS OF HISTORICAL AND PRESENT-DAY INTEREST CONCERNING PHARMACEUTICAL INSTITUTIONS.

As already stated, an effort has been made to collect some matters of historical and statistical interest concerning pharmaceutical institutions of learning. The scope of this effort will be recognized from details hereinafter set out. Unfortunately, some institutions failed to respond to several requests for information and, therefore, the work is not complete. Out of the total number of eighty colleges, departments and schools of pharmacy, which, from various sources, were learned to now exist within the United States proper, responses were received from fifty-six. Of this number thirty-nine (39) were reported to be either endowed or to be supported in varying degree by public funds, in one form or another. During the year the Pharmacy Department of the Starling-Ohio Medical College was merged with the College of the Ohio State University. At the close of the college year, the school of pharmacy of the Texas Christian University, of Fort Worth, was discontinued. The various institutions from which responses were received and which, of course, do not include any information from such as have been discontinued from time to time, are shown, collectively, to nave had a total of 35,824 graduates since their organization. During the 1914 school year they had 5100 matriculants and 359 special students, making a total of 5459 who were receiving their education at said institutions. The same institutions conferred a total of 1700 degrees at the close of the 1914 college year. An effort was made to separate the various degrees as conferred, depending upon the varying character of study and time, but the different customs and conditions in this connection, made such altogether a hopeless task. However, the total number of graduates as credited for the year have had, at least, a two-year course. It is not out of mind, that out of the total number of graduates, some must have had higher degrees conferred after graduating in pharmacy, but this is not likely to materially effect the total number.

The summary herein before shown, has been compiled from the following information as submitted by the several institutions which have extended kind attention, and matters of general and statistical interest are shown separately as with reference to each, compiled in alphabetical order according to states in which they are respectively located.

Alabama. School of Pharmacy, Birmingham Medical College. The college organized in 1894, School of Pharmacy in 1903. Organization largely due to Drs. B. L. Wyman, E. P. Hogan, L. C. Morris, J. D. S. Davis, R. M. Cunningham, B. G. Copeland, F. A. Lupton, J. M. McLester and Park. First regular course of instruction commenced 1903. In the year 1914 had fifty-one matriculants and no special students. In 1914 conferred degrees of Ph. G. (two-year course) upon eighteen; Ph. Ch. (two- or three-year course) upon five; B. S. in Phar. (four-year course) upon one; Phar. D. (one-year graduate work) upon one. Total twenty-five.

California. California College of Pharmacy, University of California. Organized in 1872. Organization largely due to James G. Steele, William M. Searby, William Simpson, William T. Wenzell, Winchell Forbes, Dr. H. H. Behr and John Calvert. This institution occupies state premises, and building rent free. First regular course of instructions commenced 1872. Has conferred degrees upon eight hundred seventy. In 1914 had one hundred twenty matriculants

and two special students and conferred degrees of Ph. C. (two-year course) upon forty-three; Phar. B. (three-year course) upon one. Total forty-four.

College of Pharmacy, University of Southern California. Organized in 1905. Organization largely due to Walter Taylor, Laird J. Stabler, C. W. Hill. First regular course of instruction commenced in 1905. Has conferred degrees upon one hundred twenty-one since organization. In 1914 had eighty matriculants and conferred degree of Ph. C. (two-year course) upon thirty-five.

Colorado. School of Pharmacy of the University of Colorado. Organized in April, 1911. Organization largely due to the activity of Dr. W. P. Harlow, Messrs. W. A. Hoover, E. L. Sholtz and Chas. Ford. First regular course of instructions commenced Sept. 1911. Is supported by legislative appropriation. Has conferred degrees on five persons. For the year 1914 it had twenty matriculants and two special students, and conferred the Degree of Ph. C. (two-year course) upon four, and the Degree of B. S. in Pharmacy (four-year course) upon one.

District of Columbia. National College of Pharmacy of George Washington University. Organized in 1872. Affiliated with George Washington University 1906. Organization largely due to J. L. Kidwell, Chas. Stott, Dan'l. B. Clarke, J. P. Milburn, R. B. Ferguson, J. C. Fill, Z. D. Gilman, Jos. W. Nairn, W. S. Thompson, G. G. C. Simms, J. D. O'Donnell, D. P. Hickling, Oscar Oldberg and Frank C. Gaither. Commenced its first regular course in the Fall of that year, and has been continuously operating since that time. Not endowed and not supported by public funds. Has conferred a total of four hundred and fifty-three degrees. For the year 1914, conferred the degree Phar. D. (three-year course) upon eleven. For the year 1914 it had eighty matriculants and sixteen special students.

Washington, D. C. Pharmaceutic College of Howard University. Organized March 2, 1867. Organization largely due to Drs. Chas. B. Purvis, Prof. Materia Medica; G. S. Palmer, Prof. Pharmacy; and S. L. Loomis, Prof. Chemistry. First regular course of instruction commenced January 2, 1870. Not endowed and not supported by public funds. Has conferred a total of two hundred forty degrees. For 1914, conferred the degree of Phar. D. (three-year course) upon nine. For the year 1914 it had sixty-two matriculants and one special student.

Georgia. University of Georgia, School of Pharmacy. Organized in 1903. Organization largely due to Dr. W. B. Hill, Dr. S. C. Benedict and R. C. Wilson, Ph. G. First regular course of instruction commenced in 1903. Discontinued in 1904 for one year, because of fire. Supported by legislative appropriations principally. Has conferred degrees on thirty-five persons. For the year 1914 had twenty-two regular students. In 1914 conferred the degree of Ph. G. (two-year course, two terms, nine months each) upon seven.

School of Pharmacy, Mercer University. Organized 1903. Organization largely due to Prof. J. F. Sellers, Professor of Chemistry at Mercer University, and doctors and druggists of Macon, Ga. First regular course commenced fall of 1903. Supported as a Baptist institution. Has had ninety-six graduates since its organization. In 1914 thirty-nine matriculants and conferred degree of Bachelor of Pharmacy upon ten (two-year course.)

Illinois. Northwestern University School of Pharmacy. Organized in 1886. Organization largely due to D. R. Dyche, E. H. Sargent, T. H. Patterson, Wm. Bodemann, H. S. Maynard and Oscar Oldberg. First regular course of instruction commenced September 3, 1886. Not endowed and not supported by public funds. Has conferred degrees upon approximately, 2050. In 1914 had one hundred twenty-four matriculants and eight special students and conferred degrees upon fifty-seven graduates in Pharmacy and twelve Pharmaceutical Chemists.

University of Illinois, School of Pharmacy. Organized in 1859, as the Chicago College of Pharmacy and became a part of the University of Illinois in 1896. Organization largely due to the pharmacists of Chicago, F. Scammon, J. M. Woodworth, F. Mahla, J. D. Payne, S. S. Bliss, W. H. Muller, Geo. Buck, L. E. Humiston, E. O. Gale, F. A. Bryan, E. L. O'Hara and others. First regular course of instruction commenced in November, 1859. No teaching from 1860 to 1870, although the organization, library, museum, etc., were continued. It is supported by state appropriations; last appropriation was $10,000 annually for two years. Has conferred degrees upon about sixteen hundred. In 1914 had one hundred matriculants and eighty-three special students and conferred degrees on thirty-nine graduates—Ph. C. degree (two-year course) five. Ph. C. (three-year course) one. Ph. G. (two-year course) thirty-three.

Indiana. Purdue University School of Pharmacy. Organized in 1885. Organization largely due to Drs. Smart and J. N. Hurty. First regular course of instruction commenced in 1885. Supported by public funds and by tuition. Has conferred degrees upon about eight hundred. In 1914 had fifty-four matriculants and conferred degrees Ph. C. (two year course) sixteen. B. S. degree (four-year course) two.

Valparaiso University, Department of Pharmacy. Organized the Institution in 1873, Department in 1892. Organization largely due to Dr. H. M. Evans and Prof. A. E. Hiss. First regular course of instruction commenced in 1892, graduating its first class in August, 1893. Supported by endowment and state funds. Has conferred degrees upon one thousand one hundred and twenty-one. In 1914 had one hundred and forty-three students, about twenty-eight of which were special students, and conferred degrees on forty-five Ph. G. (two-year

course of nine months each) and six Ph. C. (two-year course of twelve months each) graduates.

Indianapolis College of Pharmacy. Organized in 1904. Organized as a Department of the Winona Technical Institute. First regular course of instruction commenced in September, 1904. Not endowed or publicly supported. Has conferred degrees upon three hundred. In 1914 had fifty-four matriculants and three special students, and conferred the degree of Ph. G. (two years required, twenty-six and thirty-six weeks each) upon twenty-two. Ph. C. (two-year course, twenty-six and thirty-six weeks each) upon four.

Iowa. The College of Pharmacy of the State University of Iowa. Organized in 1885 Organization largely due to J. H. Harrison, Davenport, Iowa; Geo. H. Schafer, Ft. Madison, Iowa; E. L. Boemer, Iowa City, Iowa. First regular course of instruction commenced September, 1885. Supported by the State of Iowa, being a part of the State University of Iowa. Has conferred degrees upon three hundred seventeen. In the year 1914 had sixty-seven students, and conferred Ph. G. degree (two-year course) upon fourteen. Ph. C. degree (three-year course) upon three.

Highland Park College of Phar., Highland Park College. Organized in 1891. Organization largely due to Dr. O. H. Longwell and Dr. S. R. Macy. Is controlled by Presbyterian Church and supported to the extent of $200,000 by public since taken over. Was self-supporting before that time. First regular course of instruction commenced in September, 1891 Has conferred degrees upon about one thousand one hundred, many more having taken work In 1914 had sixty matriculants and thirty-five special students and conferred degrees Ph. G. (two years; twenty-five weeks) upon fourteen Ph. C. (two years, thirty-six weeks course) upon nine.

Kentucky. Louisville College of Pharmacy. Organized August 16, 1870. Organization largely due to C. Lewis Diehl, John Colgan, Geo. A. Newman, F. J. Pfingst, H. H. Rademaker, C. Tafel, Geo. Zubrod, Arthur Peter, Graham Wilder, Floyd Parks, etc. First regular course of instruction commenced in 1871. Not endowed and not publicly supported. Has conferred degrees upon six hundred eleven graduates, 1914 inclusive. For the year 1914 had eighty-three matriculants and conferred Phar D. degree (two-year course) upon twenty-nine.

Louisiana. New Orleans College of Pharmacy. Organized 1900. Organization largely due to F. C. Godbold, M. T. Breslin, W. T. Taylor and Phillip Asher. First regular course commenced November 5, 1900. Not endowed and is not publicly supported. Has conferred degrees upon two hundred sixty-seven. For the year 1914 had eighty-one regular and two special students and conferred degrees of Ph. G. (two-year course) upon twenty.

New Orleans. School of Pharmacy, College of Medicine, Tulane University of Louisiana. Organized 1838. First regular course commenced 1838. Was discontinued during the Civil War, 1862-65. Shares the endowment of School and College of Medicine, $1,000,000. Has conferred four hundred and twenty-eight degrees. For the year 1914 had seven students, and conferred Ph. C. degree (two-year course) upon three.

Flint Medical College, Department of New Orleans University. Was organized in 1900. Organization largely due to Dr. Clements. First regular course commenced 1900. The Medical College, of which the Pharmacy School was formerly a part, had a $10,000 endowment. Has conferred fifty-nine degrees. For the year 1914 had twenty-six regular students, and conferred Ph. G. degree (two-year course, eight months each) upon eight.

Maryland. Department of Pharmacy, University of Maryland (Maryland College of Pharmacy, 1841-1904.) Organized 1840. Incorporated 1841. Organization largely due to Drs. Samuel G. Baker, W. E. A. Aikin, William Riley; Pharmacists, Thomas G. Mackenzie, Geo. W. Andrews, David Stewart, Robt. H. Coleman, B. H. Atkinson, John Hill, Jonathan Chapman and J. W. M. Gordan. First regular course commenced November, 1841. Discontinued 1847 to 1856, because of the few students and lack of interest in the college on the part of pharmacists. Not endowed or publicly supported. Has conferred one thousand sixty-one degrees. For the year 1914 had seventy-three regular students and three special students, and conferred twenty-four degrees of Phar. D. (two-year course.)

Massachusetts. Massachusetts College of Pharmacy. Organized in 1823. First regular course of instruction commenced in 1867. Is endowed with about $240,000. Has conferred about eight hundred and ninety degrees. In the year 1914 had two hundred and twelve regular students and twenty-six special students, and had thirty-two graduates in pharmacy (two-year course) and seven pharmaceutical chemists (three-year course.)

Michigan. School of Pharmacy, University of Michigan. Organized 1868. Organization largely due to Dr. Albert B. Prescott. First regular course commenced October, 1868. Is supported entirely by the state. Has conferred one thousand one hundred and seventeen degrees. In 1914 had ninety-eight regular students and nine special students, and conferred B. S. degree (four-year course) upon three; Ph. C. degree (two-year course) upon twelve. Owing to change in the course, the number of graduates was less than usual.

Minnesota. College of Pharmacy of the University of Minnesota. Organized in 1892. Organization largely due to the Minnesota State Pharmaceutical Association and the University of Minnesota Board of Regents. First regular course commenced in 1892. Not endowed but received recent legislative and other appropriations to the amount of $109,000,

used for the erection of fireproof new pharmacy building. Has conferred three hundred and forty-four degrees. In 1914 had ninety-nine students, and conferred Ph. M. degree (four-year course) upon two. Ph. B. degree (two and three-year courses) upon twenty-eight.

Missouri. Kansas City College of Pharmacy and Natural Sciences. Organized 1884, re-organized 1898. Organization largely due to S. Emery Lamphear, A. M., M. D., Randall R. Hunter, M. D., Julies G. Kiefer, M. D., Ph. G., Thos. J. Eaton, M. D. First regular course commenced 1887-1888. Not endowed and not supported by public funds. Has conferred four hundred and forty-three degrees. In 1914 had forty-seven regular students and eight special students and conferred Ph. G. degree (two terms of eight months each, four years experience) upon fifteen. Ph. B. degree (two terms of eight months each, two years experience) upon three.

St. Louis. School of Pharmacy, National University. Organized 1904. Organization largely due to Barnes Medical College. Was re-organized by National University and the name changed 1912. First regular course of instruction commenced 1904, as Barnes College. Not endowed. Has conferred one hundred fifty degrees since organization. In 1914 had twenty-eight regular students and two special students, and conferred Ph. G. degree upon seven; Ph. C. upon one, and one special with no degree.

Montana. University of Montana, School of Pharmacy. Organized 1907 in connection with the state agricultural college and transferred July, 1913, to the University at Missoula. Organization largely due to state board of education. Is supported by state funds and from moneys from State Land Grants. First regular course of instructions commenced in September, 1907. In 1914 had thirteen matriculants and two special students, and conferred the degree of Ph. C. (three-year course) upon one. Has conferred fourteen degrees since organization.

Nebraska. Creighton University, College of Pharmacy, Omaha. Organized September 1, 1905. Organization largely due to board of trustees. First regular course commenced September 1, 1905. University has sufficient endowment. Has conferred about three hundred forty degrees. In the year 1914 had as students: Seniors, seventy-five, one special; juniors sixty-six, regulars, three specials, and conferred Ph. G. degree (two-year course) upon sixty-two.

School of Pharmacy, University of Nebraska. Organized in 1908. Organization largely due to E. Benj. Andrews, Chancellor Rufus A. Lyman, Henry B. Ward, Samuel Avery and Chas. E. Beasey. First regular course commenced in September, 1908. Supported by taxation, approximately $20,000 per year. Has conferred about thirty-seven degrees. In the year 1914 had thirty-seven regular students and two special students, and conferred degrees on eleven students. B. Sc. (four-year course) upon two. Ph. C. degree (three-year course) upon two. Ph. G. degree (two-year course) upon seven.

New Jersey. Department of Pharmacy, College of Jersey City, (formerly University of the State of New Jersey.) Organized in 1908. Organization largely due to pharmacists, physicians and business men of Jersey City and New York. First regular course commenced in 1908. Has conferred Ph. G. degree upon eighty-two and Phar. D. upon fifty-nine since organization. In the year 1914 had ninety-nine regular students and one special student and conferred Ph. G. degree (two-year course) upon sixteen; Phar. D. (three-year course) upon thirty-five.

New York. Albany College of Pharmacy, Department of Pharmacy, Union University. Organized in the year 1881. Organization largely due to Willis G. Tucker, M. D.; Jacob S. Mosher, M. D.; and Gustavus Michaelis. First regular course of instruction commenced October, 1881. Has conferred seven hundred and forty degrees since organization. In 1914 had one hundred and ten regular students and five special students, and conferred degree of Ph. G. (two-year course) upon forty-one.

Brooklyn College of Pharmacy. Organized in 1886. Organization largely due to the Kings County Pharmaceutical Society. First regular course of instruction commenced in 1890. Has conferred Ph. G. degree to one thousand three hundred and forty-two students and Phar. D. degree to one hundred and forty-six since organization. In 1914 had three hundred regular students and conferred Ph. G. degree (two-year course) upon one hundred and ten and Phar. D degree (three-year course) upon twenty-nine, making a total of one hundred and thirty-nine.

Buffalo College of Pharmacy (By permission, legal title, Department of Pharmacy, University of Buffalo.) Organized in 1886. Organization largely due to Dr. Matthew D. Mann, (McKinley's surgeon), Prof. Wittkans, chemist. First regular course of instruction commenced September, 1886. Has conferred degrees upon eight hundred and twenty-one since organization. In 1914 had one hundred and thirty-five pharmacists, forty chemics, and six special students, and conferred degrees upon fifty-six graduates in Phar., (Ph. G.) and fourteen analytical chemists, (A. C.)

College of Pharmacy of the City of New York, Columbia University. Organized 1829. Organization largely due to Messrs. John D. Reese, Henry H. Schieffelin, Constantine Adamson, John L. Embree, and many others. First regular course commenced in 1829. Has conferred degrees to four thousand and ninety four pharmacists. In 1914 had five hundred and fourteen students and conferred degrees of Ph. G. (two-year course) upon one hundred and

thirty-six; Ph. Ch. (two-year course, course now three years) upon twenty; Phar. D. upon six and upon Food and Drug Analysts, two.

Fordham University, College of Pharmacy, New York City. Organized in 1911. Organization largely due to Rev. Father Thos. J. McClusky, president of university. Dr. J. J. Sheridan, registrar, and Dr. Jacob Diner, pro-dean First regular course commenced September, 1911. Has conferred degrees upon seven since organization. In 1914 had thirty-eight regular students and seven special students and conferred degree of Ph. G. (two-year course) upon seven.

North Carolina. Leonard School of Pharmacy, Raleigh, N. C. Organized in 1890. Organization largely due to Henry Martin Tupper. First regular course commenced November 2, 1891. Has conferred degrees upon one hundred and nine since organization. In 1914 had twenty-seven students and conferred Ph. G. degree upon two.

School of Pharmacy, University of North Carolina. Organized in 1897. Organization largely due to Dr. F. P. Venable, Chapel Hill; Pres. E. A. Alderman, now president University of Virginia. It is supported by University. First regular course of instructions commenced September, 1907. Has conferred degrees upon, approximately, one hundred and fifty since organization. In 1914 had forty-eight matriculants and eight special students and conferred degree of Ph. G. (two-year course of nine months each) upon four.

North Dakota. School of Pharmacy, North Dakota Agricultural College. Organized 1902. Organization largely due to the druggists of the state and to E. F. Ladd. First regular course commenced in the fall of 1902. Supported by land endowment fund, national appropriation and state appropriation. Has had forty-three graduates and some three hundred students not graduates. In 1914 had twenty-nine regular students and conferred degrees of Ph. G. (two-year course) upon five and B. S. (four-year course) upon one.

Ohio. Ohio Northern University, College of Pharmacy. Organized in 1885. Organization largely due to President H. L. Lehr. Is supported in part, by a $200,000 endowment. First regular course commenced in the fall of 1885 and has had about one thousand and one hundred graduates. In 1914 had ninety-six regular students and conferred degree of Pharm. Grad. upon thirty-three, course requiring two years of thirty-two weeks each.

College of Pharmacy, Ohio State University. Organized in 1885. Organization largely due to Professor Sidney A. Norton and Professor Geo. B. Kauffman. Is supported by funds appropriated to the university and then set apart for the college. First regular course commenced September, 1885. Has conferred degrees upon about two hundred and ninety-five. In 1914 had ninety-five regular students and ten special students and conferred degrees of B. Sc. in Pharmacy (four-year course) upon six; certificate, Ph. C. (two-year course) upon seventeen.

Cincinnati College of Pharmacy. Organized March, 1850. Organization largely due to Wm. S. Gordon, Jas. M. Ayers and C. Smith. Was discontinued during Civil War. Messrs. E. S. Wayne, Wm. B. Chapman and A. Fennel being instrumental in its re-organization. Mutual interchange of knowledge and discussions commenced in 1850. Has conferred fully one thousand degrees since organization. In 1914 had forty-two regular students and conferred degree of Ph. B. (twelve hundred-hour course) upon thirty and degree of Ph. C. (seventeen hundred-hour course) upon two.

Oregon. North Pacific College of Pharmacy, a department of North Pacific College. Organized in 1907. Organization largely due to Dr. Herbert C. Miller. Department is supported by North Pacific College. First regular course commenced in 1908. Has conferred forty-three degrees since organization. In 1914 had twenty-eight regular students and eleven graduates received Ph. G. degree (two-year course.)

Oregon Agricultural College, Department of Pharmacy. Organized in 1899. Is supported by state and federal funds. First regular course commenced in September, 1899. Has conferred degrees upon seventy-eight with B. S. degree. In 1914 had sixty-nine regular students, conferred B. S. degree (four-year course) upon four and had three graduates from two-year course.

Pennsylvania. Medico Chirurgical College, Department of Pharmacy and Chemistry, Philadelphia, Pa. Organized in 1898. Organization largely due to Dr. John V. Shoemaker, Dr. Geo. H. Meeker, the board of trustees and medical faculty of the Medico Chi. College. First regular course commenced in September, 1898. Has conferred degrees upon about seven hundred graduates. In 1914 had one hundred and sixty-four regular students and conferred degree of Phar. D. (four-year course) upon three; Ph. C. degree (three-year course) upon twelve; Ph. G. degree (two-year course) upon forty. Total fifty-five.

Pittsburg College of Pharmacy, School of Pharmacy, University of Pittsburg. Organized in 1878. Organization largely due to Messrs. W. G. Schirmer, Louis Emanuel and J. B Cherry. First regular course commenced on October 1, 1878. Has conferred degrees upon about one thousand six hundred. In 1914 had two hundred twenty regular students, and three special students and conferred degrees of Ph. G. (two-year course) upon eighty; Ph C. (three-year course) upon one; Phar. D. (three-year course) upon five; Certificate of Proficiency (two-year course) upon two.

Philadelphia College of Pharmacy. Organized in 1821 by druggists of the city and districts. Incorporated, 1822. First regular course commenced in 1821. Has conferred degrees upon six thousand, three hundred sixty-three. In 1914 had four hundred eighteen regular

students and forty-nine special students and conferred degrees of P. D. (three-year course) upon one hundred five; P. C. (three-year course) upon eleven; six certificates of Proficiency in Chemistry (three-year course); one certificate of Proficiency in Food and Drugs (two-year course); twenty-three certificates in Bacteriology (ten-weeks course.)

South Carolina. Medical College of the State of South Carolina, School of Pharmacy. Organized in 1882. Discontinued in 1884 and resumed in 1894, and has continued in operation since. First regular course commenced in 1882. The college being owned by the state this school in conjunction with the school of medicine, supported by the state. Has conferred three hundred twenty-two degrees. In 1914 had forty-three regular students and conferred degree Ph. G. (two-year course) upon twenty-one.

Tennessee. Department of Pharmacy, Vanderbilt University. Organized in 1879. Organization largely due to Bishop McTyeire, President Board of Trustees, Chancellor Garland. First regular course commenced in 1879. No endowment or public funds, other than those of the university. Has conferred approximately three hundred fifty degrees since organization. In 1914 had forty regular students and conferred degrees of Ph. D. upon seven and Ph. C. upon three.

University of Tennessee, School of Pharmacy, Organized in 1898 as an integral department of the state university and maintained for the first twelve years with the seven other departments in Knoxville, Tenn. First regular course commenced in 1898. Removed from Knoxville to Memphis 1911, where it has since absorbed the University of Memphis, College of Pharmacy. Integral part of the state university supported by appropriation from the state Has conferred degrees upon sixty-two since organization. In 1914 had sixteen regular students and conferred degrees of Ph. C. upon ten; the two-year course hereafter leads to Ph. G. certificate. The three-year course to the Ph. C. degree.

Meharry Pharmaceutical College, Walden University. Organized 1889. Organization largely due to Meharry Family, Rev. J. Branden and G. W. Hubbard, M. D. Not endowed and no public funds. First course commenced October 7, 1889. Has had two hundred six graduates. In the year 1914 had fifty-two regular students and conferred degree of Ph C. upon eight.

Texas. School of Pharmacy, Medical Department, Texas Christian University. Organized in 1905. Organization largely due to M. H. Gilmore, Ph. C., M. D., Fort Worth, Texas; R. W. Needham, Ph. C., Fort Worth, Texas. First course commenced October 10, 1905. Has conferred degrees upon sixty-one since organization. In 1914 had fourteen regular students and two special students and conferred degrees upon six graduates in Phar. (two-year course)

Virginia. School of Phar., Medical College of Virginia. (Result of Amalgamation of Virginia School of Phar. and Department of Pharmacy, University College of Medicine in July, 1913.) Organized 1893. Both schools forming the merged institution, were organized through their board of trustees. First regular course commenced in 1893. The Medical College of Virginia, of which School of Phar. is a part, receives $5000 annually from the state. The total number of degrees conferred from both schools forming merger is about five hundred. In 1914 it had sixty-six regular students and five special students, and degrees of Ph G. was conferred upon twenty-five graduates (two-year course, eight months each.)

Washington. University of Washington College of Phar., Seattle. Organized in 1894. Is supported as a department of the university by a mill-tax. First regular course commenced fall of 1894. Has conferred degrees upon about one hundred fifty since organization. In 1914 had eighty-one regular students and conferred degree of Ph. C. (two-year course) upon thirteen and degree of B. S. (four-year course) upon six.

State College of Washington. Organized in 1896 when Department of Pharmacy was added. Organization largely due to the members of state legislature. Supported by state and federal funds as a part of the state agricultural college. First regular course commenced in 1896. Has conferred degrees upon one hundred sixty since organization. In 1914 had thirty regular students and conferred Ph. G. degree (two-year course) upon ten; B. Sc. degree (four-year course) upon one.

Wisconsin. University of Wisconsin Course in Pharmacy. Organized in 1883. Organization largely due to Wisconsin Pharmaceutical Association. Is supported by legislative appropriation. First regular course commenced in 1883. Has conferred degrees upon three hundred twenty-eight since organization. In 1914 had thirty-nine regular students, and one special student and conferred Ph G. degree (two-year course) upon seven and B. S. degree (four-year course) upon five.

Marquette University, School of Pharmacy. Organized 1893 as private school, 1900 as a department of the Milwaukee Medical College, 1907 as a department of Marquette. Organization largely due to R. F. W. Sommer, Ph D. Is supported by university funds. Up to 1900 it merely gave "quiz" courses. After that date it gave regular courses leading to degrees. Has conferred degrees upon one hundred ninety since organization. In 1914 had fifty regular students, and twenty-four special students and conferred degree Ph. G. (two-year course) upon twenty-one and Ph C. degree (three-year course) upon three.

Respectfully submitted,

FRANK H. FREERICKS,
Secretary.

COMPARATIVE REAL AND PERMANENT BENEFIT TO THE STUDENT OF LECTURES AND LABORATORY PRACTICE.

W. B. DAY, PH. G.

I would certainly not have ventured upon the preparation of a paper covering so broad a field, were it not for the assurance of our chairman, at whose request this paper was prepared, that it would be intended simply as a basis for discussion and that the subject would be restricted to the student of pharmacy. Had the choice been left to me, I think I should have elected as a subject, "Some Thoughts on Teaching," and the discussion then might have become an "experience meeting!"

At the outset, we may safely assume that there is no difference of opinion among pharmaceutical teachers in regard to the great importance—even the absolute necessity of laboratory courses. Few would assign an *inferior* position to laboratory instruction in valuing the *curriculum* of the pharmaceutical school.

The chief object of teaching is to train the mind to clear thinking,—the power to forecast what will happen under given conditions. The imparting of information, however necessary or desirable, especially to the professional or technical student, must nevertheless be regarded as of secondary importance.

Laboratory-practise best gives the training which enables the learner to successfully attack new problems, hence its immediate bearing upon actual life, where new problems and new conditions are constantly being presented.

In the laboratory the student learns from his mistakes, and with less serious consequences than in after life. In lecture courses, on the other hand, the lecturer presents information which has, perhaps, cost years of study and preparation and sets this forth in attractive form with demonstrations and explanations such as clarify the subject in hand and make it as simple and as easily grasped as its nature permits. The interest of the learner is aroused, his enthusiasm grows, reference reading is suggested, he is led to a sincere desire to know, which is the hall-mark of the real student.

The dangers of the lecture system arise from this very ease by which information is imbibed. We are all apt to underrate what is easily attained, the surmounting of obstacles, the courage and will-power growing out of effort and the joy of achievement gained over difficulties, are largely lost.

Yet, we must not forget that the instruction in our schools of pharmacy, until within a few decades, consisted exclusively of lectures; and by means of this instruction or through it, many pharmacists of superior professional attainments were developed. If you reply that the drug-store training afforded in those times a more acceptable substitute for laboratory-practise than it does at present, I grant the truth of your argument, but not its sufficiency. No one can say which form of discipline is best in every case. So much depends upon the teacher and not less upon the student. Garfield's definition of a university was, "Mark Hopkins on one end of a log and a student on the other."

We may be sure that when we fail to interest, we fail to educate. The first requisite to success in teaching, is the ability to create or to awaken this desire

to learn. But to interest, does not mean to amuse, though some pupils seem to incline to this view. A former associate of mine could never escape the feeling that a considerable number of his pupils regarded the carefully prepared and exceedingly interesting experiments, with which he illustrated his lectures in chemistry, as a sort of vaudeville performance.

Unfortunately, many students in schools of pharmacy are studying, not primarily to equip themselves for their life-work, but rather to attain some object which should be of secondary importance—to pass the state examination for license or to secure just sufficient credits to obtain a diploma. Seldom does a class distinguish itself by showing a general interest in the studies all along the line.

One reason for lack of interest by pharmaceutical students, is the opinion held by some pharmacists that success in college does not especially fit the student for a successful career. Occasionally this view has been impressed upon otherwise bright and capable young men, and results in an attitude of cynicism and indifference not easily overcome.

Again, a small proportion of the student-body seem to hold the opinion that when their fees are paid, the teachers should do the rest. They seem to take seriously the words which Mr. Dooley wittily puts in the mouth of the college president who asks the incoming freshman: "What branch iv learnin' wud ye like to have studied f'r ye be our compitint profissors?"

But how much want of real interest is due to causes outside the student, to prosy and uninteresting lectures, to a routine of carelessly-supervised laboratory operations and to dry and formal text-book recitations, which undertake to force set tasks on reluctant youth?

The problems we encounter here will not be solved by sitting down and thinking about them. More intimate and personal contact between teacher and pupil, so that each may better acquire the viewpoint of the other, will be of great help. This implies smaller classes or at least smaller groups and more carefully inspected,—more closely checked,—work, it means more time from both teacher and student.

Rigorous exclusion of incompetent and idle students early in the course will aid wonderfully. As President Nichols of Dartmouth said, "It is difficult to conduct a college which shall be at once an effective training-school for studious men and an infirmary for the treatment of mental apathy."

However, I believe that students of pharmacy, as a class, will compare favorably with other college students. The great majority attend school to learn, even if their ambitions are too easily satisfied. Students who seek social advantages, or who are interested chiefly in athletics, or whose sole aim is to have "a good time" are not likely to select the schools of pharmacy. With the increasing requirements for entrance, a further improvement in the *morale* of the student body may be confidently expected.

Thanks largely to the growing appreciation by educators generally, of the advantages of concrete methods over the memory-cramming system which has so long held sway in our elementary schools, I believe that our students are better fitted now than formerly, to appreciate the advantages afforded by the

laboratory and are less likely to consider its work as made up of "stunts" which have little connection with the general course.

And,—to return to our subject,—from which method of instruction, lectures or laboratory-practise, does the student benefit most? I answer, it depends on the teacher and on the student. But, in general, I think you will agree with me, that lectures which most closely approach the laboratory method, namely those which freely employ demonstration and experiment, are the most efficient, while laboratory-practise which shares some of the lecture methods, if indeed it does not directly accompany or follow a lecture, gives also the best results.

To my mind, the ideal plan is the combination of lectures, recitations and laboratory-practise associated together in each subject and with the teacher allowed much latitude in the assignment of the relative number of hours devoted to each of these means of instruction. I believe that when the present minimum course adopted by our syllabus committee is increased, the hours added should be very largely given to laboratory-practise.

And let us keep in mind the changed conditions now confronting students of pharmacy and anticipate, as we can, the further changes which are near at hand. As Professor Mann has put it aptly, concerning the student in another branch of education, "It is no longer, What does he know?—but, What can he do? No longer, How much can he reproduce?—but, How well can he produce?"

University of Illinois School of Pharmacy.

THE COMPARATIVE ADVANTAGES OF PRACTICAL EXPERIENCE AND GENERAL EDUCATION AS A PRE-REQUISITE OF INSTRUCTION IN A SCHOOL OF PHARMACY.

DR. HENRY H. RUSBY.



If the pharmacist were a machine, possessing no other intelligence than that which represented the maker, and doing his work as a result of having been wound up and set going, it would appear desirable to leave out of his construction every unnecessary cog and rivet, lever and spring, so that he would do nothing else than go through the motions for which he was constructed, and would know nothing about what he was doing or why he was doing it. To approach, as nearly as it is possible for a human being to do, to this condition appears to be the conception of the pharmacist's duty which is entertained by a large number of persons connected with the calling. Being a human soul, the real duty of the pharmacist would appear to be to escape just as far from the state suggested, as is consistent with his professional work. The thoughtful person will not fail to recall, that, even in the performance of his ordinary duties, the pharmacist is as often called upon to meet emergencies, and to be thrown upon the resources of his individual intelligence, as are most other members of the community. He will best do this, whose ideas and whose judgment have been the most broadened, and whose intellect has been the most developed;

strictly professional knowledge and skill being not considered. My claim, therefore, as to the value and importance of the preparatory general education of the pharmacy student, is a double one: first, that his professional work is not the *end* of his living, but merely a *means* to the end of that individual development, which he shares with all other members of society, and for the promotion of which he is entitled to a liberal preparatory education. Second, that such a preparatory education is necessary to give him the intellectual capacity that his professional work requires.

On the other hand, practical professional training is indispensable, and the earlier that a student gets it, the better will be his preparation. To attempt to compare the value and importance of these two elements in his preparation, is, therefore, like comparing the relative importance of food and drink in the human diet. Since both are essential, it becomes a question, not of their relative importance, but of the appropriate division of time between them and the most opportune period of its assignment. It must be remembered that there is but one time when the pharmacist can secure any systematic general education, and that is before he begins his professional course of study. From the day of the opening of his pharmacy course, until the day of his professional retirement on a competence, should he be so fortunate, his studies will become more and more narrowly professional. In the first year of his pharmacy course, there will be some latitude in the direction of a broad theoretical foundation for his studies, but in the second, his attention is to be restricted to purely technical matters. As soon as he graduates, the life and death struggle with finance, will begin to absorb him. Having decided then, how much general education he should receive, there appears to be no choice as to the place of its assignment; it must come before he matriculates in the pharmacy school, except for the slight theoretical teaching of the introductory year. Practical training on the other hand begins with matriculation, increases in the second year and becomes the exclusive occupation after graduation.

The question now arises as to the desirability of beginning this practical training earlier and of excising, in its interest, a part of the scanty general education that can come only in the ante-pharmacy period of life. It is frequently said, and truthfully so, that a boy who has a year in a store, before he attends college, makes a better pharmacy student than one who does not. It is equally true that, if he never attended primary, grammar or high school at all, but went to work in the drug store as soon as he was capable of performing any duties, he would do still better with his strictly professional work in the pharmacy school. Indeed, he would probably not have to attend that school at all, in order to be able to pass the ordinary board examination. Now, would that fact constitute a justification for instituting such an arrangement?

As a matter of fact, it makes a boy a still better student and a much better pharmacist, if he can take a year of store work between his first and second years of school work, and this arrangement is far less open to objection than the other. Far better than either, is the plan of combining the two kinds of work in a single course, as is done in our larger cities. Given a sufficiently extended course of study,—which a two-year course is not,—and the alternate days of school work

in store experience, with long vacations devoted also to store experience, is the ideal way for gaining practical experience, and this arrangement entirely eliminates the grounds for demanding practical training before the school course begins.

THE NEED FOR ENFORCING EXISTING LAWS.

BY M. I. WILBERT, PH. D.

If one were to be influenced solely by the evidence presented in the printed proceedings of the state pharmaceutical associations and in the pages of trade-journals one would be justified in the conclusion that the great American mania for law-making is more frequently evidenced in the followers of our craft than in the votaries of any other occupation.

There are, of course, good and sufficient reasons for the periodic interest on the part of members of the drug trade in legislative matters, not the least important of which is the fact, that the drug business offers such a variety of possibilities for the activities of well-meaning but usually poorly-informed reformers; which from a very early period has offered a fruitful field for so-called reform legislation, with all of the inconsistencies and inconveniences that are usually entailed.

It should be remembered though, that many of the existing laws, had their origin with well-meaning, though not always far-seeing members, of the pharmaceutical craft, who were really desirous of accomplishing something of value for the purpose of protecting the interests of the public, and that we of to-day are loath to have their work undone. These early advocates of statutory laws and we, their followers, frequently fail in our legislative program because we lose sight of the essential truth that, without strong public opinion to insist on their enforcement, statute laws are of necessity in-operative.

General arguments, however, are not always convincing and for the purpose in hand it may perhaps be best to restrict the discussion to specific instances.

The Pharmacopœia itself is now so thoroughly well established as an essential feature of the statutes relating to the drug trade, that no argument would appear to be necessary to convince members of our craft that the requirements of the pharmacopœia are *in fact* law and should be lived up to by all members of the trade entrusted with the important duty of controlling the nature and purity of drugs dispensed to the consumer.

In recent years, we have heard many and at times apparently reasonable arguments, in favor of the elimination of that feature of Section 7. of the Food and Drugs Act, which permits of variations from pharmacopœial strength, providing the variation be plainly stated upon the bottle, box or other container. The need for, or even the desirability of, such a change is open to question, when one considers that food and drugs laws are now generally well-recognized as being measures to compel commercial honesty and, strictly and impartially enforced along the lines suggested in recent court decisions, these laws will go

far toward accomplishing even more good than was expected of them by their original promoters. The enforcement of these laws, however, must be consistent and include the practices in all branches of the trade.

The futility of amending Section 7., referred to above, at the present time, without first adequately safeguarding the very foundation of the drug business, *the final distribution to the consumer*, will be apparent when one considers the reports of officials entrusted with the enforcement of pure drugs laws and of laws designed to regulate weights and measures.

The reports from the former sources are fairly well reflected in recent numbers of Hygienic Laboratory Bulletins containing the compilations entitled, "Digest of Comments on the Pharmacopœia and National Formulary." A recent compilation of some of this data (Public Health Reports, 1914, v. 29, p. 1137) shows that of 10,524 samples of twenty-six official articles reported on, no less than 3,288 or thirty-one and two-tenths per cent. were not in compliance with the official requirements.

The one important factor in the non-compliance of these articles, is carelessness, criminal carelessness, on the part of persons entrusted by law to dispense medicines to the consumer.

How fundamentally careless retail druggists really are becomes evident when we learn that in a comparatively recent report from the State of Kansas, it was stated that nearly one-half of the prescription weights examined were condemned and that of 718 prescription scales examined, 195 were found to be unfit for use.

In an address before the National Conference on Weights and Measures, held at Washington, in 1914, F. P. Downing, the Chief Inspector of Weights and Measures, asserted that the coin-weights used in the delicate weighing-apparatus in drug stores, were often found to be ten to thirty per cent. light, and that, in a recent inspection in the city of Milwaukee, twenty-two and one-tenth per cent of dispensing scales and forty-three and six-tenths per cent. of the dispensing weights in use were found in error.

An even more serious arraignment of dispensing store practices, is contained in a report by George B. Taylor to the Louisiana Board of Health. A prescription calling for two grains of boric acid and two ounces of distilled water was filled by sixty-eight New Orleans druggists. Of these only twenty-two, or thirty-two and three-tenths per cent. were correct both as to distilled water and to weight; considerable allowance being given in weight. Seventeen, or twenty-five per cent., were correct as to weight, but not as to the use of distilled water; fourteen, or twenty-six and six-tenths per cent. were correct as to the use of distilled water but incorrect in weight and fifteen, or twenty-two and one-tenth per cent. were incorrect both as to the use of distilled water and as to weight.

These instances could, of course, be duplicated many times over, but enough has been said to emphasize the point I desire to make, that a very marked improvement, in the nature of the control exercised in the distribution of drugs to the consumer, should be made, and must be made, if the pharmacopœia is to be continued as a recognized book of standards. It goes without saying that quite regardless of the purity or kind of drugs purchased or sold by the manufacturer, unless they are adequately controlled and accurately dispensed, the consumer cannot possibly derive any benefit from the laws designed to compel

commercial honesty so far as drug products are concerned. The second point I wish to make, is the need for enforcing existing laws designed to restrict the sale and use of poisons. This need is being emphasized in connection with corrosive mercuric chloride, particularly the tablets of this substance which have had more than their share of attention during the past year. For a period of nearly a year, persons in touch with newspaper work took it upon themselves to institute an altogether unwarranted agitation for legislation to prevent something that in reality did not exist.

In not a few instances, even pharmacists were carried away with the newspaper clatter for specific legislation to control the sale of so-called "antiseptic tablets," apparently quite oblivious of the fact that they, themselves, were constantly violating existing statute laws that, in themselves, would be quite sufficient to control the traffic if *honestly* enforced. Practically, all of the existing poison-laws, either directly or by inference, require that the seller satisfy himself above all, that the article is to be used for a legitimate purpose. It is generally recognized, that a very large proportion of the so-called "antiseptic tablets" sold in this country, are not used and are not designed to be used, for legitimate purposes and to this extent the drug trade of the country has been negligent of its duty in safeguarding the best interests of the public. Apart, however, from this particular phase of the subject, it is interesting to learn that the agitation for safeguarding the sale of tablets of corrosive mercuric chloride, because of possible accidental poisoning was, and still is, absolutely unwarranted. Unfortunately, reliable statistics recording cases of poisoning in this country are not readily available, so that the figures are not as startling as they would be were more complete reports available.

For six months, from October, 1913, to March, 1914, I made an effort to compile, from newspaper-clippings, all of the reported cases of corrosive mercuric chloride poisoning in the city of Washington. This compilation of newspaper-clippings, aggregating several hundred, some of them long and harrowing accounts of meaningless details, when analyzed, show a total of twenty-one cases, five males and sixteen females. Of the five males, two fatal cases were acknowledged suicides, one non-fatal case was uncertain and two children, both under two years of age, were found playing with tablets of corrosive mercuric chloride but had probably not taken any of the drug, certainly not a sufficient amount to injure them in any way. Of the sixteen females, four cases were fatal and were undoubtedly cases of suicide, nine were not fatal and in three cases the final outcome is unknown but the patients probably recovered. Summing up the intent, as evidenced by the newspaper reports, we find that the six fatal cases of poisoning were intentional or deliberate suicide; ten of the remaining cases had evidently taken the poison with suicidal intent and in three cases, including the two cases of supposed poisoning in children, the ingestion, if ingestion there was, was due to rank carelessness on the part of some other person and in two additional cases the intent was not apparent, or, as seemed more probable, the cases themselves were "faked" either by the patients or the newspaper reporters.

Somewhat more illuminating data can be obtained from a comparative study of the annual report of the Registrar-General for England and Wales. This

report for 1911 was for a total of 36,070,492 people and the specific cases of poisoning from corrosive mercuric chloride in that year, included five suicides and two cases of accidental poisoning. The report for 1912, just published, includes ten suicides and three cases of accidental poisoning.

The comparative effect of newspaper notoriety on the use of a substance for suicidal purposes, is well shown by a compilation from the annual reports by the coroner of the city of St. Louis, secured by Mr. Francis Hemm, who has kindly furnished the figures. The annual report covers the period from April 1st to March 31st, 1913-1914, which includes practically the time during which much of the unwarranted publicity was given to cases of poisoning by corrosive mercuric chloride in the newspapers of this country. Taking the figures for five years we find that the number of cases of accidental poisoning from the use of corrosive mercuric chloride in St. Louis, a city of 687,027 people in 1910, were three, viz.:— 1910, 0; 1911, 1; 1912, 1; 1913, 1; 1914, 0. The number of suicides from the use of corrosive mercuric chloride during the same period was twenty-one, viz.:— 1910, 1; 1911, 1; 1912, 4; 1913, 3; 1914, 12. It will be seen that the marked increase during the years 1913-1914, is out of all proportion to what might have been expected normally, and plainly shows the suggestive effect of newspaper publicity. Compared with the population of England and Wales, the rate reported in St. Louis would aggregate a total of more than 600 cases of poisoning from corrosive mercuric chloride alone.

In connection with the corrosive sublimate agitation, we, as pharmacists, are doubly to blame, first, in not living up to existing laws or in not compelling our competitors to comply with the law, and, secondly, in not directing the attention of newspapers, in language sufficiently convincing, to the fact that suggestive material in the way of details regarding the use of a poison or of any other agency for the destruction of human life, is unwarranted publicity, and, at best, offers an unnecessary incentive to the morbidly inclined to use the suggested method of self-destruction.

Finally, a word on narcotic legislation and the tremendous misuse and abuse of drugs of this kind. Practically every State in the Union at the present time has on its statute books a reasonably efficient anti-narcotic law which if it were not such an absolutely dead-letter would serve to effectually control the sale and use of drugs of this kind.

As members of the drug trade, we cannot effectually hide behind the frequently made statement, that the distribution of drugs of this type to the consumer, is by peddlers or irresponsible dealers. While this may be true to a considerable extent, so far as the final distribution is concerned, it is safe to say that, at some one stage, all of the material sold in this country for use by *habitues* is obtained and obtainable from otherwise respectable and responsible members of the trade who are just not sufficiently alive, morally, to be strictly law-abiding.

The recently enacted Harrison anti-narcotic measure, should serve to furnish the information necessary to make existing statutes operative, and will, at all events, serve to place us, as members of the drug trade, on record as we have never been placed on record before, as to how far we are really in earnest in our efforts to restrict the sale and use of narcotic drugs.

I think I have said enough to show that existing laws, relating to the practice of pharmacy in its wider scope, are not being enforced as they should be, and that we as pharmacists owe it to ourselves, and to the communities that have entrusted us with certain responsibilities to eliminate many of the existing abuses.

We must, above all, realize that existing pharmacy laws place all who are registered in accordance with their provisions, on an equal footing, so that we, individually and collectively, must share any discredit to our occupation from the illegal practices of registered pharmacists. The people at large, rightfully look to the law for protection and if we, as beneficiaries under a law, allow others to impose on and to take advantage of persons who rightfully look to us for protection, we are in fact responsible, quite regardless of whether we ourselves are the transgressors or allow our competitors to continue their illegal practices unchallenged.

In conclusion I beg to make the one plea that we, individually and collectively, make an honest and an earnest effort to disabuse our own minds and also the minds of our fellow citizens, of the notion that all existing wrongs can be corrected by the enactment of suitable laws. Let us develop the necessary courage to call attention unflinchingly, to existing abuses and let us insist that, whenever possible, the laws now on our statute books be enforced; that such as cannot be enforced be repealed, and that, in all future-agitations for new legislation, the best interests of the people at large only be considered as the governing incentive.

ENFORCEMENT OF DRUG LAWS.

BY FRANK R. ELDRED.



The effect of a law is altogether dependent upon its enforcement and the construction placed upon it. It is a matter of common observation that the objects of the law maker may be partially or entirely defeated by the method of administration. While there has been a very general discussion in regard to drug laws, the discussion of their enforcement has been confined largely to the officials to whom this work is entrusted. The enforcement of these laws, since the enactment of the Food and Drugs Act of 1906, has resulted in great benefit to the public; no class has profited more than honest drug manufacturers and dealers, and the entire drug trade has been placed upon a sounder foundation. As in every new undertaking, mistakes have been made and it has been necessary to learn by experience; the result has been a rapid improvement in the manner of enforcing the laws. The good accomplished has justified the methods which have been employed, but we have now advanced so far and conditions are so satisfactory, that it is time to enquire thoroughly into the possibilities of further improvement, for while it is important that drug laws should be standardized, it is no less important that the methods used in their enforcement should be standardized. In order to obtain a clear view of the situation, which is necessary before such improvements can be effected, it is necessary to approach the subject

from different angles. The present discussion is from the view-point of the manufacturer.

The first principle to be established, is that the laws were originally designed to protect the entire public, and not one class as opposed to another; only, as one necessary means for accomplishing this, did they provide for the punishment of law violators. In order to protect all classes, the drug dealers, wholesale and retail, and the drug manufacturers, must not be discriminated against and in assisting and instructing them in their efforts to serve the general public, officials can accomplish more than in any other way. The penalty should be reserved for intentional or persistent law violators. It is gratifying to note that this principle is being recognized in some of the states, and that the officials are publishing bulletins of information for the drug trade and for the consumer. Although the prime object of the law, was to protect the public, it has sometimes happened the prime object of the drug-official has been to punish the offender. Such officials have not yet learned the important lesson that most manufacturers and dealers are honest and intelligent, and are anxious to coöperate with them in protecting the public from impure or sub-standard drugs.

Another way in which the objects of certain laws have been perverted, is by arbitrary regulations or standards, which have been promulgated by officials charged with the enforcement of the law. These rulings are too often based upon a technical construction of the law, without due consideration of their effect upon the public.

It can thus be seen that, however excellent the laws may be, their power for good is dependent upon those who enforce them. It is, in some respects, unfortunate that laws relating to foods and drugs are, in most cases, administered by the same officials. When the Federal Food and Drugs Act, which is to a certain extent a model for the state laws, was passed, there were many men qualified as analysts of agricultural and food products, and this class of work had already received general recognition on account of the work of the agricultural experiment stations. Pharmaceutical chemists were few, and their work not generally known, therefore, with very few exceptions, the food chemist was called upon to administer the food and drug laws. The average food chemist, with drug work thus thrust upon him, found that, added to his inexperience in this line of work, the analysis of drugs was much more difficult than the analysis of food products. He was unfamiliar with the literature of pharmacy and disappointed, because drug analysis was not and could not well be treated, within the covers of a single volume, as in the case of food analysis. When chemists in charge of food and drug laboratories, endeavored to employ competent drug analysts, they found that this field of chemistry was practically unoccupied, and they were forced to employ as drug chemists, men without pharmaceutical training or experience. This condition resulted, at first, in the examination of certain drugs whose strength could be easily determined and, in order to make as great an impression as possible in the drug work, those which were known to deteriorate rapidly were usually selected. When this class of drugs was exhausted, attention was then turned to those which required more skill upon the part of the analyst. Under the circumstances, this was probably the best procedure that

could be adopted, but it has led to some unfortunate results which will be pointed out later.

Bearing in mind this general discussion of the situation, let us examine in more detail, the procedure now followed in enforcing these laws. The first step to be considered is the collection of samples for examination. An important regulation under the Federal law, requiring three samples to be taken, one of which is available to the seller, has not been adopted by many of the States. The Federal law, also, requires a preliminary hearing for the alleged violator of the law, while some of the State laws do not provide for such a hearing. As the State laws differ among themselves, as well as from the Federal law, and as the methods adopted for the enforcement of the laws, differ even more than the laws themselves, no general statement can apply in all cases, and, in pointing out the abuses which exist, it must be recognized that these abuses are far from universal; in fact, most of the suggested reforms are already in effect in one locality or another. In those states where law does not provide for the collection of more than one sample of each product, the seller has no recourse in case of an error in analysis, indeed the samples taken are frequently too small to allow the chemist in the state laboratory to confirm his own results by a second analysis. It is usual in such cases for the state chemist to maintain his position; neither he, himself, or any one else can establish proof of the error, for there is no official sample left, and the statement of the seller, that any subsequent sample, which he may supply, is from the same stock as that obtained by the inspector, is usually discredited. In fact, the long delay in publishing or prosecuting such cases frequently makes it impossible for him to supply another sample from the same lot of goods.

The selection of products to be investigated, is of importance, and this has too often been decided by the ease of analysis and the probability of finding substandard goods, rather than by the importance of the product to the community. It was known that precipitated sulphur frequently contained calcium sulphate as an impurity, and although this product was of no practical importance, it became a favorite subject for examination. Drugs known to deteriorate rapidly, have also been much more frequently selected than drugs known to be stable. While it is conceded that these drugs should be pure and of full strength, time has often been devoted to them which should have been given to more important drugs. Because of this manner of selecting products for examination, statistics in regard to the percentage of adulterated drugs on the market, which have been compiled in the various states, give an entirely erroneous idea of the extent of drug adulteration. These statistics are also misleading on account of the use of the terms "illegal" and "adulterated," when only a slight variation from the legal standard exists, or even when an error has been made by the official chemist. The figures thus obtained are heralded by newspapers and other agencies, until a false idea of the entire drug trade is created in the public mind.

The collection of the sample, is followed by its examination in the laboratory, and it is here that the standard by which it is judged and the method of analysis, become matters of vital importance. Some of the standards are established by the Pharmacopœia, others are published in the form of regulations for the enforcement of the law, while still others exist only in the mind of the chemist

in charge of the work. If the standard is established by the Pharmacopœia, it has had the sanction of a committee chosen from recognized authorities on the subject, but the regulations are often framed by persons having no practical knowledge of the matter which they attempt to regulate. Manufacturers may have studied for years the preparation of a product which will best serve their trade, and such a regulation may force them to forego all the advantages derived from their study and to supply a product which is not what the trade demands, or to increase the price without a corresponding increase in value. There are instances where it has even been necessary to lower the quality, in order to comply with the regulation. The unwritten standards are usually arbitrary and represent purely personal opinions, some are supplementary to published standards and others are not based upon any such standard. They exist for the case in hand, and while they are not made the basis of legal action, it must be remembered that publicity may do more damage to a seller than a legal penalty.

The Pharmacopœia also establishes many methods of analysis, but where an official method is not available, some other method is arbitrarily selected, usually without a thorough investigation of its accuracy. The inconsistency has been observed of recognizing the need for coöperative work to determine the accuracy of a method, and, at the same time, using results obtained by it as a basis for prosecuting a manufacturer. Moreover, many recognized methods will give accurate results only when the chemist employing them has had long experience in their use and this is particularly true of the methods used in drug assaying. The difficulty of obtaining competent drug chemists has already been noted and it is therefore not uncommon to find erroneous results reported by state laboratories.

After the analysis has been made and the product is measured by the standard, it frequently happens that legal proceedings are not instituted, but the results are published in one way or another. Even though the manufacturer or dealer may have been entirely in the right, he has in this case no recourse, for any suit which he might bring to force a retraction, would only place him in the light of opposing the enforcement of the drug laws and he is usually handicapped also by having no official sample. The only hope of the seller, is that the official who has occasioned the undesirable notoriety will voluntarily correct his statements, even though this involves considerable embarrassment to himself. Publicity in such cases is deplorable, as also in cases of unintentional or technical violations of the law. It has been suggested, by certain malicious individuals, that agitation and publicity of this kind are necessary to justify the office and show the efficiency of the officer, but if any drug official ever shared this idea, experience quickly dispelled it, as the most successful officials are those who recognize the need for constructive work. It is difficult to see how publicity of this kind can be of service to the public, for it places the seller who may have committed no offense, or only an unintentional or technical one, in the same light as the dishonest or persistent violator of the law and thus affords no opportunity to guard against the latter class.

This discussion of drug law enforcement, is based upon specific cases which have come under the observation of the writer, and in order to illustrate what

has been said, a few of these cases will be presented, omitting, for obvious reasons, names and localities.

Several druggists received notice that the Tincture of Digitalis purchased from them was below standard. The manufacturer was also notified that his product was below standard but not where it had been obtained, this information, however, was given upon request. Further inquiry brought out the fact that the "standard" referred to was an extractive-standard which had been arrived at by making several tinctures by the U. S. P. process and taking the average of the total solids as a standard. It is needless to point out to any one familiar with the great variations in strength of digitalis that this unpublished standard was absurd and moreover, it had no legal standing in the state. The tinctures which were declared to be below standard, had been standardized physiologically and, as nearly as could be determined by such means, they were uniform in strength and represented ten per cent. of the strength of an active digitalis leaf. Upon calling the official's attention to these facts, he evaded the question as to the propriety of a physiological standard, and refused to modify his statement to the druggists. In the opinion of the writer, this and some of the other cases cited, would furnish just grounds for legal action against officials who thus attack the reputation of a manufacturer and whose only justification is that they do not hold the manufacturer legally responsible, since the original package was broken.

A somewhat similar experience, illustrates also the danger of erroneous analytical results. A number of druggists in a certain section of the country were notified that the Tincture of Belladonna, which had been taken from them, was found to be below standard. After an exchange of several letters, the manufacturer of the preparation learned the names and addresses of the druggists from whom the tincture had been obtained and also that the strength of the various samples was from 42% to 82% of the official requirement. Samples obtained from several of the druggists concerned, were found to be of full strength and upon assaying samples from all lots manufactured during the previous six years, the weakest was only seven per cent. below the U. S. P. standard. These results showed conclusively that errors had been made in the state laboratory, but they maintained the correctness of their assays and refused to send any portion of their samples to the manufacturer, or to give credence to the statements of some of the druggists, that samples supplied to the manufacturer were identical with those taken up by the inspector.

An almost identical experience with Tincture of Opium, could be cited, although it is well known that inexperience in assaying opium preparations is a frequent cause of low results. The same situation was met in a wiser way, by an official who has always recognized the value of conservative and constructive work. All the samples of Tincture of Opium collected, were below standard. Suspecting that this was due to an error on the part of the analyst, the director of the laboratory consulted an experienced drug analyst, and it was found that such was the case. The results were therefore not reported and no injustice was done.

Arbitrary methods of analysis are often stumbling blocks. Only recently it was insisted that 8.8% of water be declared upon a label, although by actual manufacturing data it was known that less than 5% was present.

The interpretation of results is a matter which requires the exercise of good judgment. When several pharmaceutical preparations were classed as "illegal" in a board of health report, it was pointed out to the chemist in charge, that the reported results varied from the official standards by less than the inherent error of the methods and that if a second determination had been made in each case (which had not been done) the result might have been as much above the standard as the first was below. The original statement, however, was never modified, for it was argued that, as the determinations which had been made were below the official requirements although ever so little, the clerks who compiled the statistics must class the products as illegal; thus the injustice to the manufacturers whose names had been published was not corrected. Fortunately, the forthcoming Pharmacopœia will provide against such errors of judgment, by establishing maximum and minimum limits, instead of giving exact figures as standards.

Many more such instances might be cited, as well as instances showing wise and judicious administration of the drug laws, but it is not desired to multiply examples and only one more will be given to show how premature publication of results affects the conscientious official. Two druggists were notified that their Tincture of Nux Vomica was below standard; the manufacturer being also notified at the same time. Samples were obtained from the druggists, assayed by the manufacturer and found to be of standard strength. This fact was communicated to the drug official with a request for portions of his samples, the request was granted and they were found to be of standard strength, the mistake was acknowledged and rectified by letters to the druggists.

These criticisms and examples have been given only for the purpose of justifying the suggestions which are to be offered. The basis of any plan for the enforcement of the drug laws should be coöperation between drug officials and all branches of the drug trade. In the first place, products should be selected for examination on account of their power for good or evil to the community. Three samples should be taken and sealed in the presence of the inspector and dealer, one should be kept by the dealer, one used for examination and the third filed for use in case of a disagreement. If the law does not provide for duplicate or triplicate samples, then the druggist or manufacturer should insist on keeping a sample which has been sealed by the inspector, and this should be retained until a report is received from the official in charge of the work. Should the druggist or manufacturer fail to take this precaution he should be requested to do so by the inspector. In case the product is reported below standard, this sample can then be examined by the manufacturer or by a commercial chemist and, if their findings do not agree with those of the official chemist, the triplicate sample, which should be in reserve, can be used in settling the controversy. In any event, after the sample has been examined by the official chemist, his findings, if adverse, should be reported first to the manufacturer of the product. If he can show that the product is of standard quality, of course the report should go no further. Should it appear that only a technical or unintentional violation exists, not due to ignorance or carelessness, it is difficult to see how any good can be accomplished by making the matter public. Of course, honest differences of opinion will arise, but if the manufacturer cannot prove that he is in the right, the drug official can then have recourse to publicity or legal proceedings. After

the matter has been discussed with the manufacturer, the dealer should receive notice of the disposition of the case, and, in fairness to both dealer and manufacturer, notices should also be sent when the drugs examined are found to be of standard strength. This course would unite the honest manufacturers and dealers with the drug officials in their campaign against impure and adulterated drugs and would thus result in a more adequate protection of the public against them.

Much constructive work can be done by the drug officials, with expert assistance which they can easily enlist, in working out proper standards and in establishing accurate methods of analysis. It is needless to say, that both standards and methods should be published, and that intelligent criticism should be encouraged. Bulletins of information for the drug trade and the public, can also be made very valuable and a good start has already been made in this direction by some of the states.

If some such plan of action could receive the support of this and other organizations interested in the enforcement of the drug laws, it would be only a short time until all antagonism between officials and dealers would disappear and everybody concerned would be working harmoniously for the enforcement of these laws.

Scientific Division Eli Lilly & Company, Indianapolis.

A PLEA FOR A HIGHER STANDARD FOR ENTRANCE TO THE PROFESSION OF PHARMACY.

C. B. JORDAN, PH. C., M. S.



We are living in an age of progress in which the arts, sciences, and trades are making rapid advancement. Old methods and standards are inadequate to cope with modern problems. The professions allied to pharmacy, medicine and dentistry, have changed their methods and raised their standards and are giving to the public better service than ever before. It behooves us, the pharmacists of the country, to advance with and keep abreast of this progress or we will lose out and the profession will be seriously injured.

If pharmacy is a profession, the standard for entrance to it should be comparable to the present-day standards for entrance to the other professions. But is pharmacy a profession? I am ashamed to say that this question is asked in all seriousness by the pharmacists themselves. A short time ago, a series of articles appeared in Merck's Report in which this question was viewed from all standpoints by the pharmacists of the United States and some men who are prominent in pharmacy to-day declared that it is not a profession but a commercial business. Careful consideration of these articles, showed clearly that pharmacy will be what we pharmacists desire to make it. If we wish, we can make it a commercial proposition, or we can make it a dignified profession.

What are some of the things that should be done to make it a dignified profession? First, and most important, we must raise the standard for entrance to the profession.

Our standard to-day is very low. To prove this, I have only to cite the fact, that some of our state legislatures have seriously considered such bills as the one to register, without examination, all persons who have been connected with a drug store for ten years, be it in the capacity of porter, errand-boy, or soda-fountain tender.

We were all highly indignant when a New York judge declared that pharmacists are a class of men with little learning. This, however, shows us how people outside of the profession view us. When we stop to consider that in many of our states, a man can become a full-registered pharmacist by serving a four-year apprenticeship, which may mean selling patent medicine and kodaks for four years, and passing an examination so easy that he can prepare for it by taking a three months' "quiz-compend-cram" course in one of our so-called schools of pharmacy, we must concede that they are, in a measure, justified in taking such a view of us. Men in the other professions, the lawyer, engineer, doctor, dentist, chemist, and even the agriculturist, look upon our profession as an inferior one, because it requires so little preparation to enter it.

Ten years ago, the profession of medicine was in a rut. Little or no standard was maintained in many states, and we suffered from an over-production of incompetent and poorly-trained physicians and the public had little confidence in the profession. By the combined efforts of the physicians and their boards of medical registration, all this has been changed. Standards have been raised and maintained, so that to-day, in many states, a person must complete a six year college course and pass a rigid examination, before he is allowed to practice and, in a short time, he will be compelled, in addition, to spend one year in hospital work. This elevation of standard has accomplished wonders for the profession and to-day we have fewer but better physicians and the public is better served. Pharmacy is to-day, where medicine was ten years ago and an elevation in our standard will do for pharmacy what it has done for medicine.

The standards for entrance to the trades, have been raised with a like result. To illustrate, a plumber must serve four years apprenticeship, and does not receive full wage until the end of six years. The pharmacist serves a four-year apprenticeship which may mean four years behind a soda fountain and then takes an examination that he can prepare for by taking a three months' "cram-course." Plumbing is a trade, while pharmacy is a profession, and the only difference in preparation, is that the pharmacist must take this easy examination. I am speaking now of the standards obtaining in many of our western and middle-western states. I know that some states have higher requirements, and, as a result, the pharmacists in these states enjoy a much better professional business.

As a result of our low standard, we have a great army of poorly-trained men, causing fierce competition, low wages, long hours, the commercialization of the profession, and lack of public confidence. There is hardly a city, village or hamlet in the United States, that does not contain two or three times as many

drug stores as are necessary, to carry on the legitimate drug business of the community. This fierce competition causes the druggist to add side-line after side-line, until it is difficult, in some cases, to distinguish the drug store from the notion shop. It also causes the druggist to pay his clerks low wages and to work himself and his clerks long hours, in order to make a living.

Fierce competition demands cheap help, cheap help demands low standards, low standards cause overcrowding of the profession, and overcrowding causes fierce competition. Thus we have a complete cycle of cause and effect. If we attempt to break the chain at any point, we are told that we will disturb trade conditions. What if we do disturb trade conditions? You cannot remove a cancer without causing the patient pain. An uplifting of standards will not debar any one who is already registered, and the effect upon trade conditions will be so gradual that any one who is failing, will have time to adjust his affairs and enter another field.

Our low standards permit many undesirables to enter the profession, men who have no respect or regard for it, but who adopt it for the purpose of private gain. The "boose and dope" seller can easily qualify, and conduct a "saloon or dope joint" under the guise of a drug business and thus bring the legitimate pharmacist into disrepute. Only a short time ago, a saloon-keeper applied for membership in one of our state pharmaceutical associations, believing that, since he was pretending to conduct a drug business, he was eligible for membership.

The profession of pharmacy is not very attractive to our best prepared young men, because of the small compensation received by the drug-clerk. The shoe-clerk and the grocer-clerk receive as much compensation and have much shorter hours, with no educational qualifications for entrance. A young man who has completed a high-school course, and who is trying to decide what profession to enter, usually steers clear of pharmacy. A great many men who are in the profession, are dissatisfied with it and do not encourage their friends who are well-prepared to enter it. I have heard men who are pharmacists, declare that they would never let their sons enter the profession. Under these conditions, we cannot hope to recruit the profession from the ranks of the best-prepared young men.

There is a demand to-day, more than ever before, for well-trained pharmacists. The younger physicians are asking for careful urinary analysis, the incubation, isolation and determination of bacteria, the determination of the bacterial content of the secretions of the body, etc., all of which require skilful laboratory workers. I am sorry to see that, in some places, this work, instead of going to the pharmacist where it belongs, is going to the younger physicians because they are better prepared for it.

Our medical colleges are laying much stress upon bacterial diagnosis and upon the use of biological products, in the treatment of diseases. The pharmacist should be prepared to assist the physician in this work. To be prepared for this, a person should have a good college course of four years or more. What incentive is there for a young man to secure this preparation and become registered as a pharmacist when he is placed on a par, in the eyes of the law, with the man

who has sold patent medicines and kodaks for four years and has taken a short "cram-course" in pharmacy?

I have shown that our low standard causes overcrowding of the profession, fierce competition, low wages, poorly-trained and incompetent pharmacists, and lack of public confidence. Therefore I believe that the hope of the profession lies in an elevation of standard for entrance to it.

I would respectfully urge that the Association inaugurates a campaign to secure a higher standard for entrance to our profession.

SIMPLE METHOD FOR DETERMINING GLUCOSE IN DIABETIC URINE AND OTHER LIQUIDS.

Ten mils of the urine is measured into a 200-mil flask, and water added to make 200 mils. A solution of potassium carbonate (2 oz. to 6 oz. of distilled water) is filtered and made up to 8 fl. oz. To 20 mils of the diluted urine, 10 mils of the potassium carbonate solution is added in a small flask, the mixture boiled carefully for three minutes, cooled, and made up to 50 or 100 mils with distilled water. A solution of pure glucose is prepared, 1 Gm. in 200 mils of distilled water; 20 mils of this and 10 mils of the potassium carbonate solution are boiled together in a small flask for three minutes, cooled, and made up to 50 or 100 mils. The two solutions are then compared by holding the glass tubes over a piece of white paper at an angle of 45°. By pouring the liquid from the known solution into a measure glass until the tints of both are alike, and observing the amount of the known glucose solution used, the percentage can readily be determined; for example, if 27 mils of the pure glucose solution were required for the solution, then, multiplying by 2 we obtain 5.4 as the percentage of glucose in the urine.—A. F. Dimmock, M. D. (Brit. Med. Journ., August 29, 1914, 399).

THE MOST POWERFUL MAGNET.

Probably the strongest electro-magnet is produced on the new method which Professors Perot and Deslandres are applying with success. Their idea is to take one of the strong electro-magnets of laboratory type with pointed pole-pieces which already give a high value of the magnetic field, and then to put an extra coil around the air-gap between the poles so as to add considerable to the field. Such coil is made of thin copper strip and is cooled down as low as -30 degrees C. by a current of oil, so that a remarkably heavy current can be put into the coil without burning it; for instance, it will stand a current density of 1800 amperes per square millimetre, using a 0.2 millimetre strip. Such a coil is put on a Weiss electro-magnet which carries the usual coils, and gives 41,000 gauss for the magnetic field strength. Putting on the 30,000 ampere-turns of the new coil, this brought the field strength up to 51,000 gauss, and it was only lack of current supply that prevented running as high as probably 60,000 gauss, so that a most powerful field can be thus obtained.—*Boston Transcript.*

Editorial

ERNEST C. MARSHALL, Acting Editor..... 63 Clinton Building, Columbus, Ohio

PATIENCE AND "PEARSON'S."

THERE is no human quality so useful as Patience under misrepresentation; a tolerance which endures; a serenity of mind which allows oneself to be maligned; which, confident of strength sees petty natures lie and injure without a word of protest or one thought of dismay. Sanco Panza tells us, "Patience and shuffle the cards." And we should have been patient under the criticism of the profession which recently appeared in a fourth-rate magazine, rather than to have encouraged and stimulated their untrue attack by striving to show them that they were wrong. They knew they were wrong, that they were misrepresenting matters, but they simply wished to bring a dying venture into the lime-light, to acquire notoriety. Did they care that what they said was untrue? Not at all. Did they care what injury they might do by their false misrepresentation? Did they care that they maligned a body of men whose services to humanity and to every community are second to none? They cared not for this. And the only answer to such criticism is a dignified silence. You please a blackguard, when you notice him. To reply to him is as unwise as for a gentleman to answer the gibes and jeers of a boozy corner-bully.

"It don't pay to do much talkin'
When you're mad enough to choke,
For the word that stings the deepest
Is the word that's never spoke.

"Let the other feller do the talkin'
Till the clouds are cleared away,
Then he'll do a heap er thinkin'
'Bout the things you didn't say."

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DRUG IMPORTATIONS.

IN view of the testimony recently given by Mr. Harry B. French, President of the Smith, Kline and French Company of Philadelphia, before the Committee on Uniform Food and Drug Regulations of the Chamber of Commerce of the United States, it is evident that it is exceedingly difficult for Government officials at different ports, however honest their intention, to pass judgment upon drug-importations and arrive at the same conclusions.

Mr. French testified that:—

"If the Government makes a statement that the goods will not be released because of certain allegations on the part of the Government, these allegations are made to the importer and he is given an opportunity to appear before the collector of the port of entry and present arguments. The samples and arguments are then sent to Washington, and if the Washington officials uphold the local officials, the importer has no alternative but to re-export the goods. The tendency at Washington is invariably to support the reports received from the authorities of the different ports, and the reports vary with the numbers of ports.

"For example: (1) We imported Asafetida. Its solubility test was 40 per cent. It was rejected at Philadelphia. The goods were re-exported to London. We then bought Asafetida in New York. It tested only 30 per cent. solubility and we so labelled it. The goods were seized by the U. S. officials, but the Courts decided that the goods were legally our property because they were properly marked: (2) We imported Myrrh through New York. The Collector of the Port refused to pass the drug on the grounds that it contained too much ash

and did not answer the U. S. P. description. The Pharmacopœia gives no standard for ash. The Government officials suspected the presence of foreign gum. They did not assert that they could show its presence, but they refused the admission on suspicion, and their stand was upheld by the Washington authorities. An independent examination by one of the leading experts of the country showed the entire absence of foreign gum; (3) We imported Saffron through Philadelphia. It was refused admittance on the ground that it contained too much moisture, ash and sugar. Saffron is not official in the present U. S. P. (VIII) but the next edition of the U. S. P. (IX) will permit 7.5 per cent. of ash. The content of ash in the Saffron was less than that allowed by the new Pharmacopœia. There is, of course, no moisture-standard in the U. S. P. (VIII), but the next edition of the U. S. P. (IX) will permit 14 per cent. The Saffron rejected contained a slightly larger percentage of moisture than the standard to be, but this could have been readily removed by drying before admission (as it was later). As regards the sugar, it can be said that all Saffron contains sugar, and the quantity present was less than the standard. Other instances of abuses in drug importations can be cited."

According to Mr. French, the following abuses are possible:—

"The same quality of drug may be brought to five different ports. At one port the drug may be permitted entry without examination; at another port the drug may be examined and admission granted; at the third port the drug may be examined and refused admission on grounds which have a legal basis; at the fourth port importation may be refused because of suspicions on the part of executive officials and for reasons that are not legal, and at the fifth port the drug may be examined and delivery made on conditions that the goods are marked in a certain manner."

Drugs imported into the United States must comply with the provisions of the Drugs and Medicine Act of 1848 and the provisions of the Food and Drugs Act of June 30, 1906. These two acts are held by the Attorney General to be cumulative. Decisions whether drugs shall be admitted in the United States rest with the administrative officers of the Government. Neither act provides for a review by the courts of such decisions. Under Section 11 of the Food and Drug Act, importers are privileged to appeal to the Secretary of Agriculture and submit testimony, but such appeals are usually made or referred to the Bureau of Chemistry (which may have prejudged the case), and are then passed upon by the Secretary of Agriculture, whose decision is final.

In a letter to Hon. F. M. Simmons, Chairman of the Finance Commitee of the U. S. Senate, Secretary Houston, of the U. S. Department of Agriculture, writes:

"It is true, as stated by Smith, Kline & French Co., that there have been differences in the findings of the Department's chemists at different ports of entry with respect to crude drugs. The number of samples of imported food and drugs examined since the Food and Drugs Act became effective, January 1, 1907, has been enormous. It has been impossible to avoid differences in results of analyses made by different chemists at the same or different ports. The Department, however, has endeavored to be fair and consistent in its rulings. When differences in analyses have been noted, or the results of the analyses have been questioned by importers, such analyses have been made before arriving at decisions. It is believed that as a result of the experience of the Department, fewer differences in analyses occur now than formerly, but in view of the large number of samples of imported food and drugs required to be examined, it is to be anticipated that there will be some differences in the findings of the chemists in the future."

And it is these differences that should be corrected. The methods of examining imported drugs at the ports of entry should be standardized, as suggested by the Drug Trade Section of the New York Board of Trade and Transportation,

and the conditions of entry made as uniform as possible at all ports. The "personal equation" factor should be eliminated. Rejections should be based on demonstrable facts and not on suspicions.

It must be borne in mind that customs officials exercise the power of passing importations without examination; that it is within their power to give legal reasons for the rejection of an importation, which objections, however, may not have been founded on fact, and yet the importer has no legal redress. It is manifest that such a system gives a large scope for the use of personal influence, and offers the possibility of gratifying private grudges. It is not asserted or intimated that any of the officials of the ports of this country are guilty of such nefarious practice, but it is certain that the system encourages such practice. Russia is the only great civilized country in the world that has a bureaucratic government and the power of Russian officials to send citizens to Siberia, without trial, should not commend the system to American citizens.

Importers of drugs should be given the right of judicial appeal when a refusal of delivery of goods is made by the Treasury Department, a right accorded by law to importers in the assessment of goods for duty under the Tariff Act.

It may be argued that it would not be expedient to give importers the right of appeal to the courts upon matters of a scientific or technical character—that such questions should be determined only by Government officials trained in the work. But Government officials are human and naturally sustain the findings of each other. Whoever heard of a Government official in any department failing to sustain the scientific or technical report of a fellow official?

As to the lack of scientific or technical training by the Court, the latter could readily appoint a scientific or technical referee (as it does other referees) who could take testimony and report upon the facts to the Court, when an impartial decision could be rendered.

Section 11 of the Food and Drugs Act should be amended to provide for appeals to the courts from decisions of the Secretary of Agriculture in the matter of *both* food and drug importations, and it should be entirely possible to do this, and also, "adequately safe-guard the admission into the United States of only such foods and drugs as are not adulterated or misbranded or otherwise in violation of the Act."

The great principle involved in the demand for an amendment of the Act is that American citizens should not be deprived of their constitutional rights and their business placed at the mercy of executive officials without the power of judicial appeal.

J. W. ENGLAND.

THE HARRISON BILL.

THIS law has been discussed at such length that it is almost unnecessary to speak of it except to note the fact that *Jacta alea est,* it is now the law of the land, and as such it must be obeyed.

It is certainly very satisfactory that many vexatious and burdensome restrictions have been eliminated from the original bill and, in its present form, it is as unobjectionable as such a bill could well be to the trade. The National Drug Trade Conference has again demonstrated the wisdom of its establishment, for by its wise direction the bill has been wisely amended and much that was mischievous has been eliminated.

The country demanded some law to control what was termed the drug-evil. Exaggerated statements and garbled statistics had engendered the belief that the nation was largely composed of weak-minded people, who must be protected against themselves. Now that this law is passed it may be that those who thought the nation was going straight to "the demnition bow-wows" will be for a time satisfied, will allow it to demonstrate its usefulness, and will cease their striving to impose further restrictions upon an already overburdened profession.

The results of the bill may be salutary. It must be said that the intent of the framer of the bill and of its protagonists is most commendable, but sometimes laws intended to be restrictive fail, because they attempt to do too much.

Lord Chesterfield, in his famous letters to his son, told him that he wished him to frequent the Courts of Europe, principally to see "with what little wit the world was governed." And if this law proves ineffective, it will not disappoint those of us who have seen so many other laws fail in attaining the results which they were intended to accomplish.

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SAN FRANCISCO.

THE attention of the members is called to the advertisement of the World's Fair Company, which appears on Page VII of our advertising pages.

This company has the backing of some of the leading citizens of Columbus, and the inclusive price, which they make for the trip, embraces unusual features for the excursion to the meeting.

The special trains which this company will run will be equipped with moving-picture outfits and it is planned that cabaret artists will accompany every party to relieve the tedium of the long railroad journey.

Full information regarding these many attractive features may be received by writing to Mr. Robert C. Byers, the District Director, at 27-28 Ruggery Building, Columbus, Ohio, and the name of every person so writing will be placed upon a list to receive the latest information in regard to the Fair and the advantages of use of the company's arrangements in going and returning from the meeting.

JAMES HARTLEY BEAL, PHAR. D., SC. D., LL. B.

Professor Beal was born on the twenty-third of September, 1861 near New Philadelphia, Ohio. He received the education of that municipality and during the school-vacations he worked at farming and coal-mining. After leaving school he entered the profession of Pharmacy in Urichsville, Ohio, and afterwards was employed in its active practice in Akron, Ohio.

Filled with the ambition for a college-education he entered Scio College graduating from that institution in 1884, with the degree of Ph. B. He then studied Chemistry and Pharmacy in the University of Michigan, also attending the Law School of that institution. Later he entered the Cincinnati Law School, from which he graduated in 1886. He has never practiced the profession of law, but his studies in that line have been decidedly useful to the profession in the service he has rendered to it in the preparation of many legislative bills and the study of Pharmacy Laws.

In 1895 he received the degree of Doctor of Science *in Curia* from Mount Union College and Phar. D. from the University of Western Pennsylvania. He was Dean of the Department of Pharmacy of Scio College from 1887 until 1908, and was the acting president of that institution from 1902-1904.

His activities in the Association has embraced all fields of its endeavor. He became a member of the Association in 1892. In 1897 he was elected Chairman of the Section on Education and Legislation. He was chosen First Vice President in 1900, and President for the year 1904-5. He was President of the Conference of Pharmaceutical Faculties in 1906-7; President of the Ohio State Pharmaceutical Association in 1898-9; Chairman of the Committee on Uniformity of Legislation, Methods of Analysis and Marking of Food Products at the National Pure Food and Drug Congress in 1898. At the present time he is Chairman of the Board of Trustees of the U. S. P. Convention and a member of the Food and Drug Trades Conference and a member of the Board of Directors of the American Druggist's Fire Insurance Company of Cincinnati, Ohio.

In 1911 he was elected General Secretary of the Association and Editor of the JOURNAL, from which positions he resigned in June of last year. He has contributed largely to pharmaceutical literature and is the author of many books relating to Pharmacy and its coordinate professions, among these works being "The Elements of Pharmacy," "Chemical Arithmetic," "The Era Course in Pharmacy," "Pharmaceutical Interrogations," "Interrogations in Dental Metallurgy," "Equation Writing."

Prof. Beal was a member of the Seventy-fifth General Assembly of Ohio. In his legislative service he was Chairman and member of important committees, and he left upon the statute-books of the state an enduring impress in the Beal Local Option Law, now one of the most effective and wise laws of the State.

For many years Dr. Beal has been interested in the oil and natural gas properties of the Midland region.

In 1886 he espoused Fannie Snyder Young of Urichsville and two children have been born of that union; George Denton Beal, Associate Professor of Chemistry of the University of Illinois, and Nannie Esther Beal. Prof. Beal now resides in Urbana, Ill.

Scientific Section

Papers Presented at the Sixty-Second Annual Convention

THIRD ALKALOID FROM GELSEMIUM.

A. E. STEVENSON AND L. E. SAYRE.

The Proceedings of the American Pharmaceutical Association for a number of years past have recorded the progressive work of the laboratory of the University of Kansas in regard to the alkaloids of Gelsemium.

Last year a report was made on the further study of Gelsemium, giving, in the first place, the percentage of various alkaloidal and acid products from fifty pounds of the crude drug; secondly, a very complete statement as to the physiological action of the alkaloids, Gelsemine and Gelseminine. This latter work was contributed by Doctor F. P. Chillingsworth. It may be said in passing that during the past year, Doctor S. A. Mathews, pharmacologist, has gone over the physiological action of Gelseminine and his results confirm those of Doctor Chillingsworth.

During the past year, two separate lots of Gelsemium, from different sources, have been investigated for alkaloidal constituents. The results of this work, being somewhat noteworthy, we desire to record them in the present Proceedings of this Association.

The first lot of Gelsemium consisted of one pound of the concentrated fluid extract, which assayed .4% of total alkaloids. The second lot consisted of five pounds of powdered gelsemium root, ground especially for investigation.

By a change of a method of procedure, suggested by one of us (Stevenson) we have secured, as a result, a purification of what seems to promise a third alkaloid, which furnishes definite forms of crystals in the alkaloidal condition as well as in two of its salts, namely, the hydrochloride and the nitrate, the only ones thus far studied.

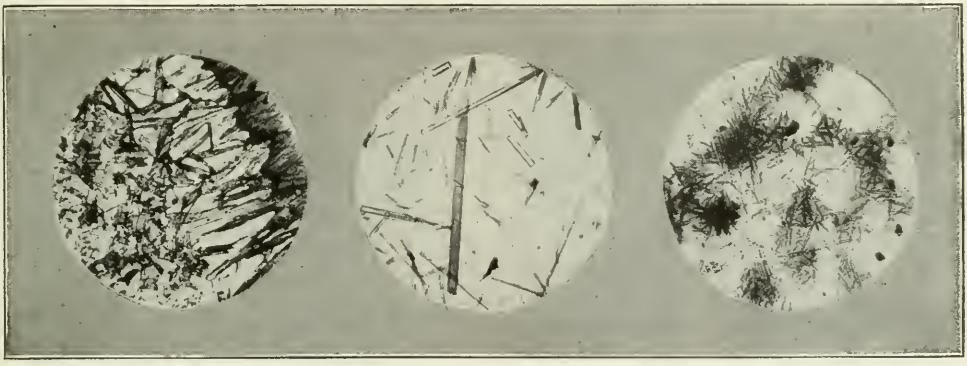
The method of procedure for the isolation of this alkaloid was practically the same in the two cases and, as results were the same, we shall give only the details for the isolation from the powdered drug, which was as follows:—

Five pounds of the finely-powdered drug were first treated with 70% alcohol until exhausted. The tincture thus obtained was evaporated to a viscous liquid. This concentrated liquid was then extracted with five litres of chloroform, divided into five one-litre portions. The chloroformic washings were then mixed and the chloroform distilled off until the liquid was concentrated to 100 cc. This second concentrate was then treated with .5% hydrochloric acid, washing the concentrate in a separatory funnel with five portions of 100 cc. each of the above acid; then six times with 100 cc. each of .25% hydrochloric acid. The combined acid solutions now were shaken out with 900 cc. of benzol in three portions of 300 cc. each. This was to remove the gelsemic acid. Then the residue was shaken out with

chloroform, 400 cc., 300 cc., 300 cc., and 300 cc.—in all, 1300 cc. in order to remove any trace of gelsemic acid.

The chloroformic solution was distilled until a highly concentrated chloroformic solution was left behind. This concentrate was washed with water. This aqueous solution, which was found to be strongly alkaloidal, was evaporated to a solid. This was completely soluble in alcohol. The alcoholic solution was evaporated until highly concentrated and then mixed with sand and dried in current of warm air. The powder which resulted was extracted first with acetone; the residue, left behind from the acetone treatment, was then extracted with alcohol. On evaporation of the alcohol, the hydrochloride of the alkaloid in question crystallized out. Photographs of the crystals of the alkaloid, the nitrate and hydrochloride, are herewith appended.

"SEMPERVIRENE" SALTS AND ALKALOID.



HYDROCHLORIDE. (Crystals on left are the more characteristic.) NITRATE. FREE ALKALOID.

We would suggest as a name for this alkaloid, "Sempervirene." This alkaloid exists in gelsemium only in minute quantities (the exact amount obtained was not determined), and it was only through the insolubility of its salts that it was discovered. On adding hydrochloric acid, sulphuric acid, or nitric acid to a neutral aqueous solution of the hydrochloride, the hydrochloride, sulphate and nitrate, respectively, of the alkaloid are precipitated. Phosphoric acid does not cause a precipitate. The alkaloid is so completely precipitated by the addition of nitric acid to the aqueous solution of the hydrochloride, that only a faint opalescence is produced by the addition of Mayer's reagent to the filtrate. In the insolubility of its nitrate the alkaloid shows a striking similarity to cinchonamine.

The nitrate is slightly soluble in alcohol from which it may readily be crystallized, separating in the form of well-defined yellow needles. The nitrate begins to darken when heated to 210°; at 280° C., it formed a black, partially fused mass.

The free alkaloid was prepared from the re-crystallized nitrate. Its chloroformic solution was yellow. The alkaloid formed pale yellow crystals, the characteristic form from alcoholic solution seeming to be short and rather thick needles.

The hydrochloride formed pale yellow crystals easily soluble in alcohol, which

crystallized on evaporation of the aqueous solution in the form shown in the photograph above.

We are convinced that this principle differs from any one that has heretofore been reported and, since we have obtained the same alkaloid from both the fluid extract and from the drug, we cannot believe that it is due to any foreign admixture in the drug. But, in order to assure ourselves that this is not the case, we are having ground, at the present time, a specially selected gelsemium for the purpose and will go over the same work repeatedly in order to reassure ourselves that no error could have crept in from such a source.

Referring to a letter from J. U. Lloyd, with whom one of us (Sayre) has had some correspondence in connection with this subject, he says: "I take it you have surely taken the pains to see that your new alkaloid is not a chemical product, in which some reaction on another of the alkaloids has produced the new one as a split off?" He further states,—"Please bear in mind the fact that drugs at different seasons of the year contain different constituents or varying amounts of the usual constituents, and that possibly you will find variations in gelsemium, in more directions than one."

It would be of interest to us to continue this investigation to see whether there are gelsemiums of different collections in which this alkaloid is absent.

THE STRUCTURAL VARIATION OF ALLSPICE.

WILLIAM MANSFIELD, M. D.

Allspice, *Pimenta officinalis*, is a New World spice. It was not known in Europe until after the discovery of America. The exact history of its discovery, and its subsequent introduction into commerce, is obscured in the haze of passing years. It is definitely known, though, that in the seventeenth century it was imported into England, where it was known by a variety of names. About the close of the seventeenth century, it was in wide use in England as a condiment, and was sold as Jamaica Pepper or allspice. The latter name is in common use to-day, but we do not hyphenate the word as they did formerly. At the beginning of the eighteenth century, allspice was used in medicine. It was not until 1721, however, that allspice was made official in the British Pharmacopœia; and not until 1810, was it made official in the United States Pharmacopœia. In the 1816, U. S. P., allspice was recognized under the name of Pimento; the common name was given as Jamaica Pepper, and its botanical origin as *Myrtus Pimento*. In the 1820 and 1828, Pharmacopœia the oil was official under the title of *Oleum Pimentæ*. In the 1830, U. S. P., its title was Oil of Pimento, from Pimento. In the 1831, U. S. P., both the fruit and the oil were official. The title of the fruit was *Pimenta*—*Myrtus pimenta*, the berries. The title of the oil was *Oleum Pimentæ*. In the 1842, U. S. P., the title of the fruit was *Pimenta*, Pimento. The unripe berries of *Myrtus Pimenta*. The title of the oil was *Oleum Pimentæ*, Oil of Pimento, from Pimento. In the 1857, U. S. P., the title of the fruit was *Pimenta*, Pimento,—the unripe berries of *Myrtus Pimenta*. The title of the oil

was *Oleum Pimentæ,* Oil of Pimento, from Pimento. In the 1868, U. S. P., the title of the fruit was *Pimenta,* Pimento,—"the unripe berries of *Eugenia Pimenta (De Candolle).*" The title of the oil was *Oleum Pimentæ,* oil of Pimento. It was not until 1873 that the name Allspice was applied to this drug. In the 1873, U. S. P., the title of the fruit was *Pimenta,* Pimento, *Syn.* Allspice,—"the unripe berries of *Eugenia Pimenta* (De Candolle)." The title of the oil was *Oleum Pimentæ,* Oil of Pimento. In the 1880, U. S. P., the title of the fruit was *Pimenta,* Pimento, *Syn.* Allspice. "The nearly ripe fruit of *Eugenia Pimenta (De Candolle),* (Nat. Ord., *Myrtaceæ*)." The oil was official as *Oleum Pimentæ,* Oil of Pimenta, Oil of Allspice. "A volatile oil distilled from Pimenta. Prep. *Spiritus Myrciæ.*" This oil was described, the specific gravity given, etc. The 1883, U. S. P., was similar to that of the Pharmacopœia of 1880. In the 1890, Pharmacopœia, its title was Pimenta, and its common name Pimenta. Its botanical origin was given as *Pimenta officinalis,* (Lindley), (Nat. Ord. *Myrtaceæ*). The oil was of-



Allspice with Male Flowers



Allspice with Perfect Flowers

ficial as *Oleum Pimentæ,* Oil of Pimenta, and it was directed that the oil yield 65 *per cent.* by volume of Eugenol, and a method was given for its assay.

Its first use as a condiment, is the predominating use of allspice to-day.

Allspice is a native of the West Indies. It is also found growing in Central America, Mexico, Costa Rica, Venezuela, and in Cuba. In the latter place, Dr. Britton, the well-known author of the Flora of Northern United States and Canada, has frequently observed it while exploring the wilds of the island. It is cultivated to a limited extent in most tropical countries. The climate and soil-conditions of Porto Rico are well-suited to the growth, and there is little reason why it should not be grown on a commercial scale on the island.

Most of the allspice in the market is collected on the Island of Jamaica. The allspice tree, which is common to all parts of the island, is usually propagated by birds, which are very fond of the ripe fruit. In their flight about the island, the seeds are dropped on the ground. So many seeds are distributed in this manner, that it is not necessary to cultivate the seed and transplant the young trees. In fact, until recent years, the people believed that only bird-distributed

seed would grow. This belief has been disproved by experiments which have shown that if the pulp is removed from the seeds, they will renew their growth and develop into fruit-bearing trees within a period of five years.

The allspice plantations of Jamaica are made up of wild trees, standing twenty to thirty feet apart. The land between them is kept clean of trees and shrubs.

The allspice tree grows to a height of twenty to thirty feet. The bark of the tree is smooth, shiny, and of a greenish-gray color. The leaves, which are arranged opposite on the stem, vary in length from two to seven inches. They are dark-green, shining above, lighter and pellucid-punctate on the under surface. When held between the eye and the source of light, the leaf appears full of small, rounded, translucent bodies. These are the oil-cavities, in which the oil is stored. When the leaf is crushed, the oil-cavities are broken, and the characteristic odor of the oil of allspice is obtained. The oil does not evaporate readily from the dried leaf. Herbarium specimens, collected years ago, still smell aromatic when crushed. It is indeed, surprising to me that the oil is not extracted from the leaves on a commercial scale.

The flowers are of two kinds, and are borne on different trees. The fleshy, perfect flowers, which are the most abundant, grow in clusters. The calyx-tube is ovoid, and divided above into four small, rounded, spreading, persistent sepals. The four white petals are rounded, and in the mature flower are bent back. After fertilization, the petals fall from the developing fruit. The stamens, which are indefinite in number, stand erect from the throat of the calyx. The pistil has a short, erect style, and a two- or three-celled ovary.

The other type of flowers common to allspice, is the so-called "male flowers," (staminate flowers), which are similar in structure to the above, with the exception that the stamens are more numerous, the pistil is abortive, and the ovules are not fertile. It is claimed by many planters, that larger yields of fruit are produced, if a few of the trees bearing staminate flowers are allowed to grow among the trees bearing perfect flowers. This is quite believable, for the reason that this would bring about cross-fertilization, which many plants secure by reason of their floral structure, or by having fertile flowers of one kind only growing on a plant, just as we have in staminate flowers of allspice.

The fruit, which begins to develop as soon as fertilized, matures in August. When fully developed, the fruit is a fleshy berry, about the size of a pea. The outer part of the fruit, is fleshy and of sweet, aromatic taste. When such a fruit is dried, it retains little of the aromatic properties of the slight, immature fruit. The full-grown, but immature fruits, are gathered for market. The gathering is usually done by children, who snap off the fruiting branches by the aid of a forked stick. Later, the branches with fruits, are collected in piles under the tree, and the fruits separated from the stalks and leaves. The green fruits are then taken to paved courts, where the berries are spread out on the pavements, or on specially-constructed frames. The berries are frequently turned during the day by a workman who uses a wooden rake for the purpose. At night, they are covered, in order to protect them from rain and dew. Under favorable conditions, allspice is dried at the end of seven to ten days. The variation in time required for drying allspice, is due to possible rainy days.

Allspice is sometimes dried by placing the berries on drying-frames over heat. When thoroughly dried, they are placed in bags and sent to market.

Allspice of commerce is a fruit, varying in color from brownish-gray to grayish-brown, to reddish-brown, to reddish-black. All the fruits, with the exception of the reddish-black ones, which are at first sweet, then sweet-aromatic, and finally slightly astringent, are first aromatic and then aromatic-astringent. The surface is granular in appearance and rough to the touch. The outline of the fruit varies from indistinctly four- to indistinctly three-sided. The upper part of the fruit is crowned either with the four-parted calyx or its fragments, or by the remains of the cohering calyx-tube, which appears as a gray ring around the rim of the tube. In the center of the small depression, there is a persistent style of variable length. The base of the fruit is either marked by a slightly depressed scar, or attached (rarely) to a short stalk.

On cross-sections the pericarp is about 1 m.m. in thickness. The septa is thin and membraneous. The fruit is two to three-celled, and from one to three-seeded. In the one-seeded form, fragments of the septa are visible. In each cell there is a solitary seed. In the two-celled fruits, the seed is slightly reniform, two-sided, concave on the inner face, and indistinctly beaked. The seeds of the three-celled fruits, are indistinctly three-sided, and slightly angled. The seeds of the two and three-celled forms vary from astringent to astringent-aromatic. Most of the tannic acid is contained in the seed,—at least judging from the taste, one is led to believe that.

The structural variation of allspice is not of recent origin, for I found a similar variation when I examined a sample of allspice which had been placed in our museum many years ago.

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THE PHARMACOGNOSY OF THE MEDICINAL RHAMNUS BARKS.

E. N. GATHERCOAL, PH. G.

INTRODUCTION.



The European Group of Rhamni:—For centuries the bark of a wild shrub, known in England as Alder Buckthorn or Berry Alder, has been used in Europe as a purgative. This bark is now recognized in most of the leading pharmacopœias of the world, under the name of FRANGULA *or* FRANGULÆ CORTEX. The plant yielding the drug, RHAMNUS FRANGULA, (*Linnæus*), ranges along roadsides and in thickets over all of Europe, except the very northernmost parts and east over northern Asia.

Associated with RHAMNUS FRANGULA is RHAMNUS CATHARTICUS, (*Linnæus*), a thorny shrub, named in England, Buckthorn or Waythorn. This plant is also found in northern Africa, India and eastern United States. The fruit, especially, has been employed for many centuries in Europe as a cathartic. It is now official in a few of the European pharmacopœias. As a medicine the fresh, ripe berries are made into a decoction or the abundant juice is expressed and made into a syrup. The juice of the partially-ripe Buckthorn Berries is yellow and

has been used for staining parchments, etc., while the juice from the ripe berries, is of a greenish-purple color and, when evaporated to dryness with lime or alum, produces the well-known water-color pigment, "sap-green." The bark, also, possesses purgative properties, which, in the fresh bark, are said to be more drastic than Frangula.

Among the other European Rhamni may be mentioned RHAMNUS INFECTORIUS, (*Linnæus*) yielding "French Berries"; RHAMNUS SAXATILIS, (*Linnæus*), RHAMNUS TINCTORIUS, (*Waldstein et Kitaibel*) and other species yielding "Persian Berries"; and RHAMNUS CARNIOLICA, (*Kern*) (possibly identical with RHAMNUS SAXATILIS), the bark of which has been found admixed with Frangula. These plants grow wild in southern and eastern Europe and Asia Minor. From French Berries a valuable yellow dye for textiles is prepared and from Persian Berries is obtained the dye used in staining Morocco leather.

The American Rhamni:—Another group of Rhamni furnishing medicinal barks, is found along the western coast of North America. With the settlement of California by the Spaniards, the new-comers noted that the native Indians used the bark of a certain kind of shrubby-tree, as a cathartic. The Spaniards named this plant and its bark Cascara Sagrada (Sacred Bark). The early American settlers used the name "Chittem Bark" (Chittam, Shittem, Shittim, Sittem), the origin of which is unknown. This drug is now official in nearly all the pharmacopœias of the world. It is obtained from the plant RHAMNUS PURSHIANA, (*DeCandolle*), which ranges over the west slopes of the Cascade Mountains, from central California well up into British Columbia, and forms extensive low forests on the valley and mountain sides.

Associated with RHAMNUS PURSHIANA, though ranging more to the south, is RHAMNUS CALIFORNICA, (*Eschscholtz*), locally known as Wild Coffee, found in central and southern California and northwestern Mexico, a shrub or small tree. Probably the bark of this plant was that originally introduced as cascara bark. It was gathered for years along with the RHAMNUS PURSHIANA bark.

RHAMNUS CROCEUS, (*Nuttall*), a shrub of central and southern California, also furnishes a bark with cathartic properties.

Another American Rhamnus which has furnished a medicinal bark is RHAMNUS CAROLINIANA, (*Walter*), of southeastern United States, commonly known as Southern or Carolina Buckthorn.

Foreign Medicinal Rhamni:—Little mention is made, in medical or pharmaceutical literature, of the medicinal use of Rhamnus barks from other countries. The bark of RHAMNUS WIGHTII, (*Wight and Arnott*), of India, is described by Hooper, (1888), who states that it is commonly sold in the shops of Bombay. The plant is included by Tavera, (1892), in a list of the medicinal plants of the Philippines. It is a tall shrub or small tree ranging over the higher hills and valley slopes in the forests of Western Bombay and Madras; is also found in central Ceylon and in Batangas, Philippines. The bark possesses cathartic, also tonic and astringent properties.

A specimen of the bark of RHAMNUS CHLOROPHORUS, (*Decaisne*), from China, was exhibited, in a collection of rare drugs, at the World's Columbian Exposition in 1893. Whether other lots of this bark have ever been received into the United States is not known. This plant, with another species, RHAMNUS UTILIS,

(*Decaisne*), was described and named by Decaisne, from specimens sent to Europe in 1854. Hemsley, however, claims that RHAMNUS CHLOROPHORUS is identical with RHAMNUS TINCTORIUS and that RHAMNUS UTILIS is the same as RHAMNUS DAVURICUS. Fortune, in an account of his travels in China, states that the bark and twigs of these species, mixed together, furnishes the dye long known in Europe as "Chinese Green." In China, the mixed barks are boiled with water, the liquor sopped up with cotton cloth coated with lime, and the resultant beautiful, green color washed out of the cloth. The plants were introduced into France and cultivated for the dye-stuff, but later the project was abandoned because of the high cost of production. The color is, apparently, very similar to sap-green.

Literature and History.

Botany:—The term "*ramnos*" used by the early Greek physicians and naturalists, is thought to be derived from the Celtic "*ram,*" signifying a tuft of thorns or branches. The name was applied to certain thorny plants by these writers, but from their meager or inaccurate descriptions it is impossible to establish that the plants mentioned by them were any of the Rhamni as we know them to-day.

Theophrastus mentions two kinds of *ramnos,* black and white, both thorny, thus shutting out RHAMNUS FRANGULA, which is not thorny. Dioscorides describes three kinds: one with long, flat, soft leaves; one with white leaves, and a third with round leaves. He states that the leaves should be used in the form of poultice for erysipelas and herpes.

Pliny, the Roman physician, under the name "*rhamnos,*" mentions two kinds, one whiter or lighter in color (*candidior*), and more shrubby (*fruticosior*), the branches terminating in straight thorns and with larger leaves. The other kind is darker, more of a reddish-color with curved spines and bearing a sort of pod. It is very evident that the second plant mentioned, is not a modern *Rhamnus* and while the first one has some characteristics of the RHAMNUS CATHARTICUS, one fails to see why it should be described as white, for the bark is black and even the flowers are greenish. Galen makes no further distinction than this one of color.

The early Anglo-Saxons were acquainted with the purgative properties of, at least, the RHAMNUS CATHARTICUS, for we find the plant mentioned in their medical writings before the Norman Conquest. The juice of Waythorn Berries is described as an aperient by Welsh physicians (Physicians of Myddvai), at the beginning of the thirteenth century.

Crescentius (1305), mentions RHAMNUS CATHARTICUS under the name *Spina Cervinæ* and describes RHAMNUS FRANGULA under the name *Avornus,* mentioning the use of the middle bark as an evacuant.

With the enlightenment appearing in natural science at the beginning of the sixteenth century, many important contributions were made to botanical and medical literature. Ruellius (1537), does not recognize RHAMNUS FRANGULA, but does refer to a thorny species of *Rhamnus*, probably RHAMNUS CATHARTICUS.

It is not until Matthiolus (1548), in his commentary on the materia medica of Dioscorides, that a good description of RHAMNUS FRANGULA, with mention of the purgative property of bark and berries, is found in literature. He first uses

the name "frangula" in connection with the plant; (*frango, frangere* meaning "to break," an allusion to the soft and fragile nature of its wood).

Among those who describe one or both plants or refer to their medicinal properties, after Mattiolus, one may mention Tragus (Hieronymus Bock) (1551), a Bavarian clergyman, who carefully illustrated and described several European Rhamni; Eucharius Rosslin (1569), a German physician, who called RHAMNUS FRANGULA "arbor fœtida," from which originated the present common German name for FRANGULA, "Faulbaum"; the Dutch physicians, L'Obell (1576),—to whom is credited the specific name "catharticus,"—and Dodoens (1583), whose writings have been translated into several languages, including English, and constitute a basis for modern pharmacognosy; Dalechamps (1586), a famous French botanist, who mentions the yellow staining properties of the fresh juice of the fruit and the production of green pigment by treatment of this juice with alum; Tabernæmontanus (1588), one of the creators of Germany botany; Bauhin (1596), a famous Swiss professor of botany who fully describes these plants and gives the name *"Alnus nigra baccifera"* to frangula; Camerarius (1598); Gerarde (1666), the author of an English herbal and history of plants; Ray (1696), an English botanist of note, etc., etc.

By this time the botanical characters of most of the European Rhamni were well established. Linnæus (1753), places them in the *Pentandria Monogynia.* He includes both RHAMNUS FRANGULA and CATHARTICUS as natives of Sweden, in his *Flora Svecica* (1745), and mentions as pharmaceutical products derived from them: *Spinæ Cervinæ Baccæ, Syrupus Domesticus, Franguiæ Cortex.*

Jussieu (1787), introduced the term *Rhamnæ* as a generic name and Willdenow (1806), established these plants in the natural system.

The California group of Rhamni was studied by many botanists during the first part of the nineteenth century. Pursh, in 1814, described the plant RHAMNUS PURSHIANA under the name RHAMNUS ALNIFOLIUS, and it was named as a new species by DeCandolle in 1825. RHAMNUS CALIFORNICA was described and named by Eschscholtz in 1823 from specimens sent to him. This plant is closely allied to RHAMNUS PURSHIANA, if not identical with it, as has been repeatedly pointed out from time to time. (Beckett, Rusby, True and Klugh, Brandegee.) RHAMNUS CROCEUS was described and named by Nuttall, from plants seen near Monterey, California, his manuscripts being published by Torrey and Gray in 1838.

About 1850, Mayer mentions the use of Chittem Bark as a purgative among the Indians and trappers in California. Probably the Yokia and Yuki Indians of Mendocino County, California, may be credited with the introduction of cascara bark to the American settlers. These Indians used the bark in decoction—a handful boiled in about a gallon of water—as a cathartic and a kidney-remedy. The Indian name for the plant in *Hosa-kala.*

In 1877, Bundy, in a short article about *Berberis aquifolium* mentions the cathartic qualities of cascara bark and in the following year published a description of the drug and suggested its more general use as a valuable medicine.

Collection and Commerce:—Within a few years after 1877, Cascara Sagrada established a reputation as a tonic-laxative and peristaltic that placed it in the

foremost rank of purgative medicines, and its collection became an established industry in the regions where cascara trees were abundant.

The bark, stripped from the trees during the season (April to August), when it "peels" easily, is laid, outer-side upwards, over racks placed in the open and when dry, it is broken into smaller pieces, sacked, sold to local dealers and shipped out by the car-load.

The trees soon die after the removal of the bark, and the dried wood, either of the tree cut down or standing, has been an added fire-menace to the forests.

The exact amount of frangula and cascara barks entering commerce yearly, is hard to estimate, though it is stated by Henkel that probably more than two million pounds of dried cascara bark, is consumed annually. The total consumption of frangula bark is far less in amount.

Cultivation:—The Cascara plant has been cultivated in Washington, D. C. (True and Klugh), in Michigan (Farwell), in Kew Gardens and in Ireland, but nowhere, as yet, for the commercial production of bark. While there have been very extensive areas of the wild growth in California, Oregon, Washington and British Columbia (Zeig), the annual destruction of trees has also been very large, so that the district of bark-collection has been gradually driven north, until now apprehension has arisen lest the entire natural growth of Cascara trees be destroyed. (True and Klugh.)

Pharmacopœial History:—The fruit of RHAMNUS CATHARTICUS was recognized in the London Pharmacopœia of 1650 and in later pharmacopœias, until the present day. It was official in the U. S. Pharmacopœia, only in 1820. The fresh fruit is now official in the pharmacopœias of Belgium and Greece and in the French Codex, and the Syrup, made from the juice of the fruit, in the pharmacopœias of Belgium, Germany and Switzerland and in the French Codex.

The bark of RHAMNUS FRANGULA has been recognized in the pharmacopœias of central Europe since the middle of the last century, including the Danish, (1868), Norwegian, (1870), Swedish, (1871), German, (1870), Prussian, (1862), Hanoverian, (1861), and Dutch, (1871). It was recognized in the Austrian Pharmacopœia first in 1889, in the French Codex in 1908, in the U. S. Pharmacopœia in 1880, and in the British Pharmacopœia in 1885, though it was omitted from the last edition. Neither is it mentioned in those of Croatia, Hungary, Italy, Roumania, Servia and Spain, but otherwise it is at present recognized in all the pharmacopœias of Europe and in those of the United States and Japan.

The bark of RHAMNUS PURSHIANA, first made official in the U. S. Pharmacopœia of 1890, is now recognized in the pharmacopœias of the United States and Japan, and in all those of Europe except the Finnish, and that of Portugal, which has not been revised since 1878.

None of the other Rhamnus barks have been made official in any pharmacopœia nor do any of them appear in the commerce of Europe or America except, possibly, as adulterants.

Adulterations:—The fruit of RHAMNUS CATHARTICUS and also the juice from the fruit, have both been repeatedly reported as adulterated. The early Edinburgh Dispensatories mention the adulteration of the fresh fruit with fruits of the Dogberry (*Cornus*) and of the Black Alderberry (*Frangula*). The juice of

the fruit was very frequently diluted with water by those who prepared it. (Quincy's English Dispensatory.)

Van Pelt, (1874), points out that the juice of RHAMNUS FRANGULA berries is substituted in Belgium for that of RHAMNUS CATHARTICUS berries. As the former juice is much inferior as a cathartic, the substitution is very reprehensible.

Umney, (1874), states that the freshly prepared juice of Buckthorn Berries has a specific gravity of 1.070 to 1.080, which, after the juice has stood for a year, is reduced to 1.035. However, four commercial samples of fresh juice gave a specific gravity about 1.005, indicating the addition of water to the extent possibly of 500%.

Adulteration of Frangula has apparently never been extensively practiced. The bark of RHAMNUS CATHARTICUS has been found admixed with Frangula bark, and Moser, also Mitlacher, reported in 1905 the presence of RHAMNUS CARNIOLICA bark in Frangula. The barks of several species of *Alnus*, especially of ALNUS GLUTINOSA (Wuerffel, 1907), have been mentioned as adulterants.

Cascara bark has been reported adulterated with RHAMNUS CALIFORNICA bark, but in view of the facts that the species are nearly if not quite identical; that unquestionably the RHAMNUS CALIFORNICA bark was the one originally employed by the Spaniards and named by them Cascara Sagrada; that the chemical constituents cannot be differentiated and that the gross characters of the barks as also their histological structure are very similar, it seems hardly correct to name the one an adulterant of the other. Moss in 1888, and Squibb in 1899, complain of the poor quality of the Cascara of those dates, but attribute it to bark gathered out of season and improperly cured, on account of the heavy demand and high price created for the drug. Rusby, (1890), mentions the bark of CORNUS NUTTALLII, as an adulterant of Cascara bark. Perrot, (1901), mentions the admixture, in Europe, of RHAMNUS FRANGULA bark with powdered Cascara. Miller, (1912), finds in a large consignment of Cascara a spurious bark rather uniformly mixed and present to a considerable extent. In 1913, a large consignment of bark from Europe labeled "BUCKTHORN," received at Chicago, was found to consist entirely of this same *non-Rhamnus* bark. It resembles cascara quite closely, in size, shape and external markings, but, upon closer examination, was found to be the bark of a *Prunus*. The taste is quite astringent, somewhat bitter and has a decided flavor of hydrocyanic acid and benzaldehyde. The structure is much like that of PRUNUS VIRGINIANA bark and the external markings also closely resemble those of unrossed wild cherry bark.

Histology:—Moeller, (1892), places accurate illustrations of the structure of FRANGULA *and of* RHAMNUS PURSHIANA in his *Pharmakognostischer Atlas*. Cabanes, in 1895, refers to the histology of *Frangula* and, likewise, do Sayre, (1897), Wuerffel, (1907), Mitlacher, (1905), and Moser, (1909.)

The bark of RHAMNUS PURSHIANA was first described histologically, by Prescott in 1879, who mentions the presence of "thick-walled' yellow cells." Later, it was more carefully and fully described by Moeller, (1882), who differentiated it from *Frangula*, pointing out the presence of "stone-cells" in the Cascara, and their absence from the Frangula.

Beckett, (1889), refers to the histology of Cascara, and so do Rusby, (1890), and Sayre, (1897), who attempt to differentiate the Cascara barks from RHAMNUS

PURSHIANA and RHAMNUS CALIFORNICA. They find, however, but slight points of difference, principally some distinctions in the characters of the medullary rays.

Perrot, (1900), and Miller, (1912), refer to the structure of Cascara bark in connection with certain adulterants thereof.

Kraemer, (1912), discusses and illustrates the number of cells in the medullary rays of Cascara bark, and Farwell, (1914), compares the medullary rays of RHAMNUS CALIFORNICA bark with those of RHAMNUS PURSHIANA bark, differentiating between the barks by the differences in the rays.

Chemistry:—The chemistry of the *Rhamnus* barks presents much of interest because from the first analysis of frangula bark by Gerber in 1828, it has been observed that the active principles are resinous in nature, difficult to separate from one another and to determine their true constitution. Even at the present day, these analyses are far from being in a satisfactory condition.

Gerber obtained, among numerous other vegetable constituents, 2.7% of yellow resinous coloring matter and 4.6% of bitter-acrid extractive, which he considered contained the active constituents. He noted that the yellow coloring matter became dark-red with alkalies.

Hubert, (1830), analyzed the juice from the fruit of RHAMNUS CATHARTICUS. He found a bitter substance, apparently the active constituent, and closely resembling the *cathartin* of senna leaves, a green coloring matter, which, in the ripe fruit is purple-red, due to the action of acids in the ripening fruit and a brown material, insoluble in alcohol but easily soluble in water.

Fleury, (1842), obtained from the unripe berries of RHAMNUS CATHARTICUS, *rhamnine* in pale yellow crystals.

Kane, (1843), isolated *chrysorhamnine* from unripe Persian berries and *xanthorhamnine* from the ripe berries. *Chrysorhamnine*, ($C_{23}H_{12}O_{11}$), extracted with ether, formed golden-yellow, silky, stellated needles, sparingly soluble in cold water, soluble in alcohol and ether and in alkalies, (though much altered), and by boiling in water is changed into xanthorhamnine, ($C_{23}H_{12}O_{14}$). This latter substance is extracted from the ripe fruit with boiling water and is olive-green in color.

Winckler, (1849), obtained *rhamnine* from the unripe fruit of RHAMNUS CATHARTICUS and *cathartin* from the ripe fruit. He considered that *rhamnine* by the ripening process is converted into *cathartin* and glucose. (This is the first published evidence of the glucosidic nature of these resinous constituents of the *Rhamni.*)

Binswanger, (1849), found in frangula bark the crystallizable yellow coloring principle which was named (by L. A. Buchner) *rhamnoxanthin*, an ether-soluble amorphous resin, one or more alcohol-soluble resins, a bitter substance of resinous nature in which the purgative properties of the bark seem to lie, sugar, gum, tannin, plant acids, extractive, etc. He compared the bark of RHAMNUS CATHARTICUS with frangula bark, and found that the constituents were similar, but included also a bitter, water-soluble, crystallizable substance to which he attributed the greater hydragogue properties of the RHAMNUS CATHARTICUS bark. This principle was differentiated from the *cathartin* of senna leaves and named *rhamno-cathartin*. He found *rhamno-xanthin* also in the seeds of RHAMNUS CATHARTICUS and RHAMNUS FRANGULA. The juice of the ripe berries contained

a violet coloring-matter turned red with acids and green with alkalies, a bitter extractive, etc. The unripe berries and those also of RHAMNUS INFECTORIUS contained only the *rhamnin* of Fleury.

Buchner, (1853), who worked with Binswanger at Munich in 1849, obtained from the root-bark of RHAMNUS FRANGULA, *rhamnoxanthin* in sublimable, golden-yellow needles, very slightly soluble in water, but easily so in alcohol or ether, (especially hot), readily in solutions of ammonia and the fixed alkalies with a fine, purple-red color and in concentrated sulphuric acid with a red color. By neutralization of the alkaline solution, the *rhamnoxanthin* was thrown out as a yellow powder and by dilution of the concentrated sulphuric acid solution with water it was likewise separated out.

Casselmann (1857), obtained the resinous constituent from Frangula in crystalline form, designated it *frangulin* and decomposed it with the formation of glucose and an acid product he named *frangulinic* or *nitro-frangulic* acid.

Phipson, (1858), found *rhamnoxanthin* in the branches of RHAMNUS FRANGULA and of RHAMNUS CATHARTICUS and corroborated Buchner's description of it.

Gellatly, (1858), obtained from Persian berries, a substance which corresponded with Kane's *xanthorhamnin*, but to which he ascribes the formula. $C_{48}H_{28}O_{28}$, and which, hydrolyzed, yields grape sugar and *rhamnetin*, ($C_{22}H_{10}O_{10}$) in yellow needles nearly insoluble in cold water but soluble in alcohol or ether.

Kubly, (1866), separated from frangula bark the glucoside, which he named *avornin*, an amorphous resin and a principle similar to cathartic acid, which he had a short time previously isolated from senna leaves. The *avornin* he split into *avornic acid* and glucose.

Lefort, (1866), named *rhamnine* and *rhamnegine* as the coloring constituents of RHAMNUS CATHARTICUS berries.

Stein, (1868), indicated that the *rhamnine* of Fleury, the *chrysorhamnine* of Kane, the *rhamnetine* of Gallatly and the *rhamnine* of Lefort, to be the same substance in different degrees of purity, while the *xanthorhamnine* of Gellatly and the *rhamnegine* of Lefort were also identical, but the *xanthorhamnine* of Kane and that of Gellatly, were not the same substance. He stated that, undoubtedly, *rhamnetin* was identical with *quercetin*. He named as the coloring principles of Persian berries *rhamnin*, soluble in water and *rhamnetin*, insoluble in water. The *rhamnin* upon hydrolysation with dilute acids, or with the ferment present in the fruit, yielded *rhamnetin* and a sugar.

Schutzenberger, (1868), revised the formula of the *rhamnegine* of Lefort and decomposed it with the formation of *rhamnetin* and a sugar isomeric with mannite.

Faust, (1869), stated that the *frangulin* of Casselmann, and the *avornin* of Kubly, are identical, and assigned them the formula $C_{20}H_{20}O_{10}$. He named the acid-resin from the decomposition of this glucoside, *frangulic acid*.

Liebermann and Waldstein, (1876), identified *emodin* (trioxymethylanthroquinone) from frangula bark and stated that frangulic acid is probably *emodin*.

Liebermann and Hormann, (1878), found *rhamnoxanthin* in the pericarp of the berries of RHAMNUS INFECTORIUS and determined that, under the action of a ferment, it splits into *rhamnetin* and *isodulcite*.

Prescott, (1879), was the first to analyze cascara sagrada bark. He found

a brown resin of strongly-bitter taste, colored a vivid purple-red by potassium hydrate solution, sparingly soluble in water or ether, but freely so in alcohol, chloroform, benzole, carbon disulphide and solutions of caustic alkalies, though precipitated from the latter by acids. He found also some other resins, tannin, oxalic and malic acids, etc.

Limousin, (1885), noted that the scraped surface of Cascara bark, touched with strong ammonia or potash solution, gave a fine red coloration and considered it an incontestable evidence of *chrysophanic acid,* which he declared the "resins" of Prescott to be.

Ward and Dunlop, (1887), described the enzymatic action in the berries of RHAMNUS INFECTORIUS, but found that no such action took place in the fruits of RHAMNUS TINCTORIUS, CATHARTICUS, CAROLINIANA, etc.

Meier and Webber, (1888), mentioned in addition to other constituents found in RHAMNUS PURSHIANA bark, an enzyme, to which they attribute the griping effects and the epigastric pain sometimes accompanying the use of the drug, especially of the fresh bark.

Eccles, (1888), found minute quantities of an alkaloid present in Cascara fluid extracts.He also examined twenty prominent drugs by treating the ethereal extracts obtained from fluid extract, with ammonia water and found that the ethereal extracts from frangula and cascara barks alone assumed a red color. He did not distinguish between them.

Schwabe, (1888), found frangula to yield *frangulin* 0.04%, and *emodin* 0.1%. He corroborated the physical characters of *frangulin* as stated by Casselmann and Faust and amplified upon them. His proximate analysis indicated the formula $C_{21}H_{20}O_9$. *Frangulin,* by hydrolysis, yields *emodin.* He found in cascara bark *emodin* but no *frangulin.*

Hooper, (1888), examined the bark of RHAMNUS WIGHTII. He reported several resins, some ether-soluble, some alcohol-soluble, tannin, bitter principle, etc. From the published analyses of RHAMNUS PURSHIANA bark, he concluded that the two barks rather closely correspond chemically, though the former probably had a larger tannin-content. He mentions a yellow coloring-matter in the phloem layer of the bark, which assumes a brilliant red with potash.

Thorpe and Miller, (1892), corroborated Schwabe's formula for *frangulin* and determined that the sugar from the decomposition of *frangulin* was a true *rhamnose.*

Leprince, (1892), isolated a crystalline constituent from cascara bark which formed prismatic needles of a yellow color, insoluble in water, slightly soluble in chloroform but readily so in alcohol and in aqueous solutions of alkalies with a purple-red color. He named it *cascarine.*

Phipson, (1892), regarded the principle isolated by Leprince as identical with *rhamnoxanthin* described in 1858.

Perkin and Geldard, (1894), named the coloring principles of the fruit of RHAMNUS INFECTORIUS: *rhamnazin, rhamnetin* and *quercetin.*

Cabanes, (1895), reported that, in sections of frangula bark, treated with alcoholic potassa solution, the parenchyma of the cortex, medullary rays and bast, all acquire a strong red color, but that in cascara bark sections, only one or

two layers of the cortical parenchyma, the medullary rays and the five or six inner rows of bast parenchyma, take the color. Ammonia and soda solutions react the same as potassa.

Dohme and Englehardt, (1897), obtained what they declared to be the glucoside of cascara bark, *purshianin*, in dark, red-brown needles, not responding to the tests for *emodin*, nor identical with *frangulin*, but yielding, by hydrolysis, *emodin* and a sugar.

Sayre, (1897), proposed identity-tests for distinguishing between the barks of RHAMNUS CALIFORNICA and RHAMNUS PURSHIANA as follows: To 0.2 gm. of the powdered bark in a small test-tube add 2 cc. of potash, T. S. RHAMNUS CALIFORNICA gives a blood-red color at once. RHAMNUS PURSHIANA an orange-red color.

Leprince, (1899), reports cascara bark to contain *chrysarobin, emodin* and *chrysophanic acid.*

Aweng, (1899), presented a method for separating the glucosides of frangula, cascara and rhubarb into groups, by successive extraction with benzene, benzene and absolute alcohol, and 60% alcohol. He obtained a number of glucosides, in varying proportions, from each of the three drugs, most of them yielding, by hydrolysis, *emodin, chrysophanic acid* and *frangula-rhamnetin.*

Oesterle, (1899), found that *frangula-emodin* differs from *aloe-emodin.*

Perrot, (1900), stated that powdered frangula bark with alkalies, produces a deep-red color, but that powdered cascara bark gives a yellow-color and that the powders could be distinguished in this manner.

Tschirch and Polacco, (1900), analyzed RHAMNUS CATHARTICUS fruit and determined the presence of *emodin*, several coloring matters, a sugar, etc. The purgative action was ascribed to the *emodin.*

Jowett, (1904), found in cascara bark, *emodin*, glucose, an enzyme, fat, etc. His attempts to isolate the bitter principle, were unsuccessful, but he claimed that *emodin* was not the most important purgative principle. The enzyme, in one-gram doses, was not griping. There was practically no distinction in the chemistry of the barks from RHAMNUS PURSHIANA and RHAMNUS CALIFORNICA.

Warin, (1905), presented a colorimetric method for the quantitative determination of the *emodin* in frangula bark, by neutralizing the rose-red tint of a measured, alkaline, aqueous extract of the drug, with the green tint of a standardized, nickel-salt solution. Later, he pointed out that, before this method could be applied to cascara bark or its preparations, the same must be so treated as to hydrolyse the glucosides.

Tschirch and Pool, (1908), found that the *emodins* from frangula and cascara barks were identical, that neither of the barks yielded *rhein*, but that *chrysophanic acid* was present in frangula bark. They approved Warin's colorimetric assay.

Waljaschko and Krassowski, (1908), claim that the same coloring principles occur in the fruits of RHAMNUS CATHARTICUS as in those of RHAMNUS INFECTORIUS and RHAMNUS TINCTORIUS. In addition the fruits of RHAMNUS CATHARTICUS were found to contain about 2% of *emodin* bodies.

Tschirch and Bromberger, (1911), obtain from the bark of RHAMNUS CATHARTICUS, *frangula-emodin*, chrysophanic acid, *rhamnofluorin, rhamnosterol*, glucose, tannin, etc.

Oesterle, (1911), states, regarding the oxymethylanthroquinones, that *aloe emodin* reduced, forms chrysophanic acid, but oxidized, forms *rhein*, while chrysophanic acid oxidized, likewise forms *rhein*.

Tutin and Clewer, (1911), state that the anthroquinone derivatives from rhubarb,—*rhein, emodin, aloe-emodin, frangula-emodin, emodin-monomethyl-ether* and chrysophanic acid, are derived from medicinally inert glucosides; that only *aloe-emodin* and chrysophanic acid possess purgative properties, and that most of the purgative value of the drug, lies in a non-glucosidic resin which they isolated.

Rosenthaler, (1911), presents a list of anthroquinone drugs distinguished from one another by the physical characters of their micro-sublimates and the color-reaction of these sublimates in alcoholic solution with ferric chloride solution.

Schmidt, (1912), describes *frangulin*, (*rhamnoxanthin*), ($C_{21}H_{20}O_9$), as occurring in lemon-yellow, glistening, fine needle-crystals, odorless and tasteless, melting at 228° to 230° C. It is almost insoluble in water and in cold ether, but soluble in 180 parts of 80% hot alcohol. Concentrated sulphuric acid dissolves it with a dark-red color and with caustic alkalies it forms solutions of a purple-red color. By boiling with an alcoholic solution of hydrochloric acid, it becomes converted into *rhamnose* and *frangula-emodin*, ($C_{15}H_{10}O_5$), which forms bright-red, glistening needles melting at 255° C. It is insoluble in water, slightly soluble in alcohol and easily in chloroform and benzol In ammonia it dissolves with a red, slightly bluish color.

(To be continued.)

A NEW METHOD FOR THE ESTIMATION OF GLYCERIN IN PHARMACEUTICAL PREPARATIONS.

C. H. BRIGGS, M. S.



Glycerin is one of the most common and generally used substances in pharmacy and yet its quantitative determination in pharmaceutical preparations presents many difficulties. On several occasions in our laboratory it has been necessary to attempt to assay for glycerin such preparations as elixirs, tooth-pastes, shaving soaps, liquid face creams, and essences of pepsin, and the results have been far from satisfactory. Several methods with necessary modifications to adapt them to the particular preparations were tried, but in some cases the duplicate results showed marked variations, thus making doubtful the reliability of the process.

The official methods for the determination of glycerin in wines are not applicable to all pharmaceutical preparations because of interfering substances and, to say the least, they are long and tedious. (See Allen's Organic Analysis Vol. 1, page 167.)

It would seem therefore that a simple and reliable method for the estimation

of glycerin, applicable to all pharmaceutical preparations, is much to be desired. For pharmaceutical purposes it is not necessary that the method shall be extremely accurate, for if the results do not vary more than 2% from the actual glycerin content, this will meet all practical requirements.

Pharmaceutical preparations contain such a wide range of substances such as sugars, salts, organic acids, soaps, proteids, resins, colors, etc., that it is almost impossible to separate the glycerin in a pure condition by means of solvents and precipitants. It occurred to the writer that perhaps the glycerin could be separated from many of these substances by distillation in a vacuum, provided some liquid could be added with which the glycerin is not miscible and which would also distil and help carry over all of the glycerin. Glycerin boils at 162° C. at 10 m. m. pressure, but by the law of partial pressures, it will vaporize at a lower temperature if distilled with some substance with which it is not miscible. After the trial of several substances it was found that santal oil was best adapted for this purpose, and that, if a small amount of glycerin was distilled with a relatively large amount of santal oil, the glycerin was completely carried over. It was also found that the glycerin could be readily separated from the santal oil in the distillate by dissolving the oil in purified petroleum benzine and washing out the glycerin with small quantities of water in a separatory funnel. The glycerin in the combined aqueous solutions could then be estimated by various methods, but the writer prefers evaporating off most of the water at a low temperature and completely de-hydrating the glycerin in a vacuum over sulphuric acid. This procedure has not been noted elsewhere in the literature.

The glycerin used in these tests was of the ordinary U. S. P. grade and when about two grams were dried in a vacuum over sulphuric acid for 24 hours, it lost about 3% of moisture. Water was then added and the solution evaporated to a thin syrup at about 50° C. After drying for 24 hours in a vacuum as above the same weight of anhydrous glycerin was recovered, showing that none had been lost by the de-hydration.

Two determinations by the above distillation method of a 20% solution of glycerin in water gave 99.3% and 100.8% of the glycerin, showing that where there are no interfering substances the method works satisfactorily.

The method was next tried on a mixture containing 10% of sugar and 10% of glycerin. Three determinations gave 110, 109 and 108% of the glycerin taken. A test with Fehling's solution showed that some of the sugar was decomposed and carried over with the distillate. The addition of a small quantity of slaked lime to the distillation flask prevented the sugar from going over but it also held back part of the glycerin. Calcium carbonate did not prevent the sugar from being carried over but calcined magnesium oxide worked better and three determinations of the glycerin in a solution containing 20% of sugar and 20% of glycerin, using one-half gram calcined magnesia, gave 100.1%, 101.5% and 99.9% of the glycerin content. The use of more magnesia did not work as well.

In order to test the method on products containing various ingredients, samples

were prepared of six preparations of widely different character. The amount of glycerin found was as follows:—

	Glycerin used	Glycerin found
Elixir Gentian Glycerinated N. F.	50%	49.4% 48.9%
Tooth Paste	50%	48.1% 48.6%
Shaving Soap	25%	27.6% 26.7%
Essence of Pepsin	20%	18.8% 19.7%
Elixir Lactated Pepsin	10%	10.5% 11.4%
Stearic Acid Cold Cream	8%	7.2% 8.1%

While these results are not as accurate as the writer at first hoped for, still considering the wide range of the preparations, the results are fairly satisfactory as they give a good indication of the amount of glycerin present and probably accurate enough for all pharmaceutical purposes.

The method is not applicable without some modification to preparations where there is a large amount of sugar and a small amount of glycerin, as some of the sugar decomposes and is carried over. One test was made on such a preparation by repeating the distillation and the result was slightly low.

The length of time required to complete a test by this method is about two days, but four or five tests can be made per day, so that the actual time consumed is about two hours per assay.

The apparatus found most convenient for this assay consisted of a 500 cc. distillation flask with the side neck bent so that the flask would be inclined to an angle of 45° when in use. The top of the flask was cut off to within 1½ inches of the side neck, and the flask was closed with a rubber stopper fitted with a glass tube drawn to a very fine capillary. The flask was connected to an ordinary straight tube condenser, the side neck being inserted well into the condenser. For a receiver an 8 oz. Squibb separatory funnel was used and the end of the condenser was bent slightly and inserted into the large end of the separatory funnel so that the funnel rested horizontally. This enabled the vacuum to be connected to the small end of the separatory funnel and at the same time allowed the funnel to act as a receiver for the distillate.

The method in detail is as follows:—

Take sufficient of the sample to obtain about two grams of glycerin and place in the 500 cc. side neck distillation flask with one-half gram of calcined magnesium oxide. Warm on a steam bath for five minutes. Now add 75 cc. of santal oil and distil in vacuo until about two-thirds of the oil has been distilled. Rinse the

condenser with about 100 cc. of purified petroleum benzine and add to the distillate. Now rinse the condenser well with 5 cc. of water and add to the distillate. Stopper the separatory funnel, shake well, and draw off the aqueous layer into a second separatory funnel. Extract the benzine oil solution three times with 5 cc. of water to completely remove the glycerin and add to the first extract. Shake the combined aqueous extracts with 30 cc. of petroleum benzine to remove traces of oil. Allow to stand one-half hour and draw off the aqueous layer into a tared four inch petrie dish. Rinse the separator with 5 cc. of water and add to the glycerin extract. Evaporate off most of the water at a low temperature (not over 50° C.) and de-hydrate in a vacuum dessicator over sulphuric acid for 24 hours or to constant weight. This anhydrous glycerin is very hydroscopic and must be weighed quickly. To convert to ordinary commercial glycerin divide the weight obtained by .97.

The distillation must be carried out cautiously at first to prevent bumping. After the water has passed over, the distillation proceeds quietly and can be carried out rapidly. A free flame should be used and this should be held in the hand and kept in constant rotation around the bottom of the flask.

In conclusion the writer wishes to express his thanks and indebtedness to Mr. W. B. Parker, who carried out the assays and did most of the experimental work in connection with this paper.

Scientific Department Parke, Davis & Co., August 26, 1914.

A SIMPLIFIED GLYCERIN ASSAY.

F. T. BRADT.

The object of this investigation has been to work out a simple, rapid, and accurate method of estimating the quantity of glycerin in a sample reasonably free from impurities.

The wide variation in results of assays in recent years was deemed of sufficient importance to warrant the appointment of committees in this country and Europe to study methods of analysis and recommend the ones that gave most satisfaction. As a result it was agreed that the acetin method should be the basis on which glycerin should be bought and sold, but that the dichromate method might continue to be used for technical purposes in a properly standardized form. The exact procedure to be followed in purification was described very minutely and also the actual process of assay. The dichromate method was substantially the same as that proposed by Hehner, using solid dichromate for oxidation, an excess of ferrous ammonium sulphate, and dilute dichromate solution to titrate the excess.

Many other methods, besides these two well-known ones, have been suggested for the assay of glycerin, and some of them are well worth a brief review.

In 1891 [1] Benedikt and Zsigmondy proposed to oxidize glycerin with potassium permanganate in alkaline sol. precipitate the manganese by treatment with H_2O_2,

[1] Zeit. Angew. Chem., 1891, 400–401.

add sulphuric acid, and titrate the oxalic acid formed with volumetric permanganate. The advantage claimed for this method is that butyric acid, if present, does not interfere; chemically it is little different from the dichromate method, but is lacking in the simplicity of the latter.

Five years later [2]Bordas suggested adding potassium dichromate (48 gm. per litre) to 5 cc. of a dilute glycerin solution until the color changed from a bluish green to a yellowish green. If the glycerin be either too dilute or too strong, difficulty will be experienced in detecting promptly the color change. Two years later Maurice Nicloux pointed out that the above method was based on the supposition that glycerin is oxidized to formic acid. He pointed out the fact that it was changed directly to CO_2 and water, giving as the equivalent 37.28 gms. per litre, and not 48 gms. as first proposed.

A method proposed by [3]Simon Zeisel in 1902 is especially interesting. He proposed to distill the glycerin with 63 *per cent.* hydriodic acid in a current of carbon dioxide. The vapors, cooled to 60°, are passed through a small wash bottle containing amorphous phosphorus suspended in water to remove iodine or hydriodic acid fumes. The isopropyl iodide formed is then passed through a four *per cent.* alcoholic silver nitrate solution and the silver iodide collected and weighed. Schultze, in 1905, in a paper giving a comparison of results by various methods, insists that this is the only trustworthy estimation in many cases.

[4]Chaumeil, in 1902, suggested oxidizing glycerin with iodic acid in the presence of sulphuric acid and titrating the iodine liberated with thiosulphate. Chlorides, of course, will interfere, but by a preliminary estimation a correction may be made.

The specific gravity method is recommended by [5]Stiepel, subtracting from the percentage found, the *per cent.* of ash multiplied by 3.33. This, of course, would only hold good in the presence of small amounts of salts. However, the method may be of marked value as a means of quick checking.

An extraction method is described by [6]Schukoff in which he uses a sample containing about one gram of glycerin and evaporates to a syrupy consistency on a water bath. It is then mixed with twenty grams of anhydrous sodium sulphate, and extracted with anhydrous acetone in a Soxhlet apparatus. After evaporating the acetone the residue is weighed as glycerin.

A method which at first seems very simple and satisfactory is one proposed by [7]Wagenaar in 1911. He precipitates copper by means of a fixed alkali in the presence of glycerin. The glycerin holds a quantity of copper in solution varying with certain physical constants. This is determined by causing liberation of an equivalent of iodine which is titrated with thiosulphate. In calculation of results an empirical table is used giving the quantity of glycerin equivalent to from one to thirty cc. of thiosulphate.

Three other methods may be just mentioned, (a) the litharge method which

[2] Compt. Rend., 1896, 1071–1072.
[3] Chem. Centr., 1902, 1424–1425.
[4] Bull. Soc. Chem., 1902, 629–634.
[5] Chem. Centr., 1904, 1626–1627.
[6] Zeit. Angew. Chem., 1905, 294–295.
[7] Pharm. Weckblad, 1911, 497–502.

gives results neither theoretically correct nor in themselves concordant. (b) The oxidation with sulphuric acid and weighing of the glycerol carbon, and (c) treatment with excess of KOH and lime at 320° and collection of the hydrogen.

Recently a modification of [8]Hehner's method has been proposed and highly recommended as being very practical for the ordinary laboratory routine. It is carried out something as follows:

Weigh accurately 5 gm. of glycerin and dilute with distilled water to 500 cc. Transfer 25 cc. of this solution into a 200 cc. beaker; add 40 cc. of a solution of dichromate (made by dissolving 74.615 gm. of potassium dichromate in 750 cc. of water, adding 150 cc. of sulphuric acid, and sufficient water to measure one litre at 25° C.), and 25 cc. of sulphuric acid. Cover the beaker and heat on the steam-bath two hours. Dilute the solution to 500 cc. and mix well. Remove 50 cc. to a 500 cc. flask, add 3 grams of potassium iodide and allow to stand five minutes. Dilute with 150 cc. of water and titrate the liberated iodine with N/10 sodium thiosulphate.

Each cubic centimetre of N/10 thiosulphate used indicates an excess of 0.0657 cc. of dichromate solution and each cubic centimetre of the dichromate solution is equivalent to 0.01 gm. of glycerin.

Several disadvantages have been found in working with this method. It seems to present many unnecessary complications. The number of dilutions necessary in carrying out the operation would seem to offer fertile ground for error. The use of such a concentrated solution of dichromate makes the temperature-factor very important, Hehner having shown that a variation of one degree causes an expansion of .05 *per cent.* Failure to recognize this fact might in itself introduce a very considerable error. Further, the solution used is stronger even than theory requires. Assuming that two and one-third molecules of dichromate are required to oxidize one of glycerin, then 74.5675 grams is the equivalent of 100 grams of glycerin and not 74.615 as proposed. Again, the time required for oxidation is longer than actual experiment shows to be necessary. In working with glycerin, slow oxidation would seem to indicate oxidation of impurities, which must be avoided as far as possible. Twenty minutes was found to be ample time to completely oxidize a sample of glycerin by this method. A further complication is introduced by the use of 50 cc. for the final titration when it is just as easy and satisfactory to use 32.88 cc. and avoid the use of a factor in the final calculation.

With these facts before us, then, we suggest a simple modification of the proposed dichromate method. The process is as follows:

Weigh out accurately 5 grams of glycerin, dilute to 100 cc. and take exactly five cc. (equivalent to 25 milligrams of the glycerin) for titration. Add 50 cc. of N/10 potassium dichromate solution, 25 cc. of sulphuric acid, and heat on a steam-bath for 20 minutes. Cool, add one gram of potassium iodide, and after standing 10 minutes, dilute with 150 cc. of water. Titrate the liberated iodine with N/10 sodium thiosulphate and calculate the percentage of glycerin.

Comparative results show this method to be very satisfactory. It is simple, rapid, and reasonably accurate. The dichromate solution is one that every laboratory uses constantly and so the making of new solutions is avoided. Although

[8] Analyst, 1901.

the solution is much more dilute than the one proposed, still twenty minutes is ample time to completely oxidize the glycerin.

We tried checking our results by means of the specific gravity method and found that it may be feasible with certain cautions. First, there seems to be a surprising lack of complete glycerin specific gravity tables, and in those we have, there is a question concerning the accuracy of the expansion factor for dilute solution. On the other hand, if concentrated glycerin solutions are used, temperature becomes very important, an error of 0.1° in reading causing an error of nearly 0.15 *per cent.* in the amount of glycerin. But using a solution of from 60 to 80 *per cent.* glycerin and being very careful in reading the temperature a reasonably accurate check may be obtained for the oxidation method.

The following results give a fair comparison of the two methods, showing how they may be used as comparative methods.

SPECIFIC GRAVITY METHOD.

WATER	COMMERCIAL GLYCERIN	TEMPERATURE	CORRECTED SP. GR.	PERCENT OF GLYCERIN
14.8920 gms.	23.7315 gms.	80° F.	1.1526	95.08
20.1857 gms.	19.2522 gms.	82° F.	1.1194	95.14
20.0300 gms.	10.2064 gms.	82.7° F.	1.0809	95.02
.....	31.113 gms.	85.1° F.	1.2537	95.20
			Average.....	95.11

DICHROMATE METHOD.

N/10 THIO. CORRECTED	N/10 DICHROMATE	PERCENT OF GLYCERIN
19.58 cc.	49.40 cc.	95.36
19.56 cc.	49.40 cc.	95.39
19.60+ cc.	49.40 cc.	95.23
19.53 cc.	49.40 cc.	95.49
	Average	95.37%

DISCUSSION.

MR. VORISK:—I would like to ask the second speaker about the titration of that liquid after the oxidation has taken place,—What indicator is used?

MR. BRADT:—Simply use potassium iodide and the iodine liberated is titrated with thiosulphate, using starch as indicator. The color changes from blue to green.

THE NECESSITY OF A METHOD OF ESTIMATING THE INTRINSIC VALUE OR ESSENTIAL QUALITIES OF COFFEE.

L. E. SAYRE.



It has always seemed to the writer that the references in formularies, such as our National Formulary, in specifying the commercial or geographical brand of coffee, are made with a definiteness which is rather superfluous. To say, for example, that a coffee must come from Java and Mocha is a rather excessive discrimination. This will appear when it is shown that there are other brands than Java and Mocha (usually specified) which will give to coffee preparations equally fine flavor peculiar to the roasted berry. It is true that Mocha and Java coffees have a fine flavor widely esteemed, but Santos coffees for example, are immensely popular among American consumers and are

said to be fast supplanting the milder growths of other countries, the finer grades being invariably smooth and pleasing in liquor and flavor, possessing all the essentials of fine coffee. In point of quantity, it is stated by coffee dealers that Brazil heads the list of coffee producing countries, its annual product ranging from 7,000,000 bags to 8,000,000 bags of 130 pounds each, 75 *per cent.* of which is exported to the United States.

To give some idea of the brands or grades of coffee which are distributed in the Middle West, we give the following tabulated statement of one of the largest coffee distributors in that section.

PRINCIPAL BRANDS AND VARIETIES OF COFFEES SOLD IN WESTERN MARKET.

Commercial Classification.	*Variety or Grades.*
Mandheling	33
Java	24
Mocha	Many
Buckaramanga	20
Bogota	20
Maracaibo	20
Guatemala	20
African Java	10
Peaberry from Mexican Rio and Santos	Number almost indefinite
Santos, Bourbon	Number almost indefinite
Rio	Many grades
Victoria	5

Botanically speaking, the genus known as Coffea is divided by botanists into some sixty species, of which fifteen are referred to Africa, seven to Asia and about twenty-two to America; but there is abundant reason for supposing that the majority of these so-called species are but mere varieties, a single genus, due to different conditions of soil, climate and cultivation.

According to some botanists, there is but one genus and species of the coffee plant, Coffea Arabica. Others again contend that there are two separate and distinct species, classed as Coffea Orientalis and Coffea Occidentalis. While admitting but one genus, the difference in size, appearance and product being attributed by them to a variation in the soil, climate, and method of cultivation. There are three principal varieties, however, readily distinguished and recognized by those who have much to do with it and are known to commerce as Coffea Arabica, Coffea Liberica and Coffea Maragogipe, lately discovered in Brazil, all of which, or their transplants, furnish the coffee of the market.*

It happens to fall to the lot of the Drug Laboratory of the University of Kansas, to examine, for the state, samples of coffees sent in by inspectors. No attempt is made to report on the quality, such as flavor, or commercial value, because of the entire absence of reliable tests, such as would stand in the courts, but enough experience has been gained to make the statement that there are a great number of brands and blends which furnish as fine a flavored preparation as that of Java and Mocha. For example, we have received during the past year an invoice from the Jamaica coffees which are grown in the upland and those which are grown in the lowland. Those from the upland, when properly roasted

* Coffee, Its History, Classification and Description; Walsh, page 37.

are of as elegant a flavor as that from Java or Mocha. The same may be said of the best brands of Santos coffee. Theoretically, therefore, it is unnecessary to confine, for pharmaceutical purposes, coffees to those of the definite geographical origin usually stated.

The quality of coffee, i. e., the "æsthetic" quality, which we find in the flavor or aroma, is not due to the caffeine or the caffeo-tannic acid content, and, indeed, to no one of the principles which are usually included in the so-called official analyses.

Most any one who is familiar with the different brands of coffee acknowledge that Mocha and Java have very agreeable and "fine" flavors as above stated, but an analyst would be brave who would go before the courts and attempt to prove that they were worthy of this distinction, from the results of the "cup test," for example. That is to say, there is no scientific data which may be regarded worthy of the attribute "accuracy" which can be offered as evidence or proof of relative qualities,—"good," "better," "best," or "poor," "fair" or "fine."

Those who have followed the literature upon this subject no doubt are familiar with the fact that the so-called aromatic or æsthetic properties were contained in the volatile principles which may be recovered by sublimation or distillation.

One report upon this, made some years ago (Merck's Report, 1907, page 61), stated as follows regarding a sublimation test: Operating upon 500 grams, it was stated that "only a few drops of a colorless liquid were obtained in a second receiver. This product suggested an odor akin to capronic acid, mixed with a trace of valeric acid. It was acid in reaction, very powerful and penetrating, diffusing very rapidly in the air, and when thus very highly diluted, gave the pronounced odor of coffee. The condensed liquid, in the first receiver was of a yellowish brown color and had a rather acrid and ammoniacal odor; it also, when diffused, suggested the odor of coffee." It was then stated that the characteristic aroma developed in the roasting of coffee is due possibly to a mixture of organic acids and compounds of phenolic origin. Erdmann, in the *Berichte der Deutschen Chemischen Gesellschaft,* 1904, refers to the oil of coffee which has been obtained by treating roasted coffee with steam. The yield from 150 kilos of roasted and ground Santos coffee was 83.5 grams or 0.0557 *per cent.* of an oil of brown color, of a specific gravity of 1.0844, and strong odor of coffee. On distillation of the oil, the greater portion passed over between 150° and 190° C. in the form of a light colored oil. This contained furfur alcohol and much valeric acid.

In connection with the process of roasting, it is worthy of note,—First, the effect of roasting of coffee produces, by partial carbonization and partial caramelization, a number of insoluble constituents and an equal number, perhaps, of soluble ones, which have a definite relation to the flavor of the coffee. But the quantitative relationship of the æsthetic qualities seems impossible to make, partly because of the very minute quantity of the aroma-containing constituent; the so-called caffeol, which is produced by roasting, does not often exceed .06% and thus far we have no easy means for estimating this quantitatively. From an ordinary infusion or decoction, this aromatic principle can be washed out by means of chloroform. On the evaporation of the chloroform, the caffeine crystallizes out and the chloroformic residue, when washed with ether, yields a substance which

has the aroma of coffee and also the bitter flavor, and this peculiar flavor differs according to the brands, or blends, of coffee. Yet, this process, usually followed with a chemical process designed to give quantitative results, can be regarded as of qualitative value only. It would be interesting to have the chemical nature of these bodies definitely stated but statements thus far made give only a suggestion of their possible composition.

Recently, valuable papers have been published, which bear upon this subject, of the volatile products of coffee. One of special interest was published in the *Bulletin General de Therapeutique,* Sept 15, 1913, by M. I. Burmann, who states, in substance, that the volatile "toxic" principle in coffee is not caffeine, but lies in the associated principles of that alkaloid; that "decaffeinated coffee is as noxious as the caffeinated," and that an "atoxic coffee" is one that has these toxic principles removed. These, he finds to be the volatile principles and separable by distillation.

An aqueous distillate is collected in refrigerated ether. The ether separated from the aqueous distillate and the etherical layer dried by means of calcium chloride. The ethereal solution is then distilled under diminished pressure and the noxious principle, in very small percentage, is left behind in the residue. This principle, which the author terms, "caffeo-toxine" is a colorless, refractive liquid which soon decomposes into a yellow and finally to a black color. This principle, the author refers to as of phenolic, aldehydic or ketonic character.

In an abstract of an article by G. Bertrand and G. Weisweiler, published in the Analyst, Sept., 1913, p. 417, the volatile principle of coffee is referred to as a "pyridine-like body." This statement seems to agree with the results which we have obtained in our laboratory.

Burmann, in extracting the volatile principle, made use of 10 kilograms of the finely ground roasted coffee, which was distilled with steam until about 30 liters of distillate were obtained. This was extracted with 10 liters of pure ether, etc. It is unnecessary to point out that such a process would be impracticable for any routine analytical procedure. But the necessity for estimating chemically the essential qualities of coffee becomes urgent and apparent when we remember the present loose and inadequate commercial classifications based on purely geographical data.

Doctor C. F. Nelson and myself have endeavored to find reagents that will determine quantitatively the constituents above named, i. e., the tannin-like bodies, which belong to the polyphenols, and the pyridine-like bodies, and to make these determinations by "micro-chemical" methods.

We are encouraged to believe that we may be able soon to furnish data concerning these two constituents by means of both colorimetric and "nephelometric" methods. We are at present working with the color reaction, produced by phosphotungstic acid, which we have found, thus far, to be extremely delicate. By this method a quantitative accuracy of five parts per million seems to be attainable.

To say the least, this topic opens up an interesting question. The recent investigations point also to a corelative one which has a bearing on the dietetic problem in connection with the beverage.

If it can be proven that this volatile principle is toxic, it is detrimental to public

welfare to place a high value, commercially, on that which is injurious physiologically. If we estimate a coffee in proportion to the amount of the toxic ingredient, this is not in harmony with the principles regulating the value of dietetics.

Finally, if the pyridine-like body is developed by the roasting process, does not the same principle develop in the roasting of cereals and in chicory? Our experiments seem to indicate that this may be true.

DISCUSSION.

MR. WM. C. KIRCHGESSNER:—I would like to ask, if I may, if you cannot estimate the value of the coffee by the caffein content?

PROF. SAYRE:—You cannot estimate the value of coffee by the caffein content. You can sometimes obtain a very high caffein content from cheap coffee, and from a very expensive coffee you may get a very low yield in caffein content.

MR. KIRCHGESSNER:—Why is it that all the Decaffa Coffees are so dark? I have had men who make it a business of roasting coffee tell me that they could produce Decaffa Coffee at the same price that any other coffee could be sold. They would put the coffee in a roaster, tighten the cap and apply heat and after the coffee was roasted for a certain length of time let the roaster cool, cap up. After taking off cap a dark brown powder would adhere to the top of the roaster which they claimed was the caffein. I got some of this coffee roasted in this way and the people who used it said that they could not see or taste any differences from coffee which they paid twice as much for.

PROF. SAYRE:—I suppose you know that roasters of coffee always expect a loss in caffein in the process of roasting. This constituent is sublimed to a greater or less extent in the operation and it is well known that the crude caffein collects on the walls of the coffee roasters and this sublimate is very valuable because of its caffein content,—because of its richness in this alkaloid.

PROF. KREMERS:—I would like to ask whether the acid gives the aroma to the coffee, or aromatic residuent?

PROF. SAYRE:—It is given by the so-called oil which is associated with pyridine. The pyridine like constituent is associated with the aromatic principles or is a part of them. Dr. Nelson has been working with me on this problem. He is at Harvard during the summer and he hopes in the fall to work out the final result as to this toxic constituent which is present only in very minute quantities. We find it has a very close connection with the aromatic or so-called toxic principle.

PROF. KREMERS:—Do you know of any pyridine content, so-called that is suggestive of the aroma of coffee?

PROF. SAYRE:—No, I do not. It is well known that pyridine *itself* is not suggestive of coffee. But it is well known, however, that you can modify odors by certain combinations, especially when they are present in minute quantities.

THE ASSAY OF OPIUM.

A. R. L. DOHME.

There is no more important nor more frequently used assay process in the pharmacopœia than that of opium. There is no drug used in which the monetary value of variation in assay results is greater, for above all other drugs the price of opium is directly determined by and based upon its assayed strength of morphine. There is hence every reason why this assay process of all processes in the pharmacopœia should tell the truth or as nearly the truth as is possible. Hence the great question before the Revision Committee is the process of assay for opium and again this committee is confronted as it was in 1904 by two opposing factions favoring respectively the U. S. P. method which exhausts the opium by water and the lime method which exhausts the opium by the use of lime. Manufacturers of morphine probably know best the relation of assay of drug to yield of manufacture because

they are getting comparative data along this line all the time. It is admitted that about one *per cent.* of morphine is lost in manufacture whether it be in exhausting the opium for making fluid extract, tincture or morphine salt or by oxidation or other change. I have convinced myself that this loss is not due mainly if at all, to incomplete exhaustion as delicate qualitative tests for the presence of morphine in exhausted drug indicate the absence of morphine in practically all instances. Rather is the loss in my opinion due to oxidation or other chemical change of the morphine in the process incident to the exhaustion of the drug or manufacture of same into its respective preparations.

This view is taken by Debourdeaux, (*Jour. Pharm. Chimi., 1912, II, p. 491*) who found that opium is subject to change when stored for any great length of time. The content of water soluble morphine or morphine salt is increased due to some chemical change in the mass.

It is generally admitted that the present U. S. P. opium assay leaves morphine in the mother-liquors which I have been able not only to detect qualitatively but quantitatively by extracting it with immiscible solvents and determining it volumetrically by a process of assay devised by my laboratory, and to be described below. If you know that by the lime process you obtain from an opium 10 *per cent.* of morphine; by the U. S. P. process, as modified by the present Revision Committee, 11.5 *per cent.* and by our method 12.3 *per cent.* of morphine and if you know by your own test that the lime-process mother-liquors contained about 2.25 *per cent.* of morphine; the U. S. P. method mother-liquors contained about one *per cent.* of morphine and the mother-liquors from our process contained practically no morphine, would you hesitate about voting that the lime method is the best method to be adopted for the pharmacopœia? Yet this is the condition that confronts us all as users of the pharmacopœia, for a majority of the proximate assay committee after once adopting the U. S. P. method by a practically unanimous vote reconsidered their action on the motion of one member and then adopted the lime method of Prof. Stevens, the chairman of the committee, by a vote of 5 to 3, with one member not voting. To be sure, the lime method result above given represents the morphine actually obtained and weighed, to which by the proposed method of assay to be made official in the U. S. P. is to be added 1.12 *per cent.* as a correction factor, making the result 11.12 per cent. Kindly remember that they do not and did not propose to add a correction factor to the result obtained by the U. S. P. process, although any one can prove, as we have done, that there is 0.75 to 1 *per cent.* of morphine left in the U. S. P. mother-liquors. If the committee sees fit to use a correction-factor at all, and personally I think it unwise and unscientific as it admits weakness and error on its face and hence induces doubt, should they not, in their comparative assays in justice to the public and the process have used a correction factor for the U. S. P. method? In that event the comparative figures would read, using the same opium:—

Lime method 11.12 *per cent.* morphine.
U. S. P. method 12.25 *per cent.* morphine.

In 1904 the same thing occurred, and I, as chairman of the committee, appealed the matter to the General Revision Committee of twenty-five. Both myself and Prof. Stevens presented arguments and figures to substantiate our positions and the General Revision Committee supported me by a vote of 16 to 9 and

the U. S. P. method and not the lime method became official in the U. S. P. and has been for ten years. At that time and at this time Prof. Stevens censured me for going outside the committee and giving any results or facts of the committee's work to the General Committee or the public. I do not, however, favor star chamber methods in anything and never have, and feel to-day that every result or piece of work done by the Assay Committee or any other sub-committee of the U. S. P. Revision Committee is the property of the general public and should be made known by publicity to that public. I am sure there is no result, work or vote standing over my name in the files of the Revision Committee during the fourteen years I have been a member of it that I am not willing and glad to have made public and, further than that, I do not propose to remain indifferent and let a process of assaying opium that I consider to be inferior be adopted as the official and legal opium assay process for this country by a small majority of a committee. I propose to fight for what I feel convinced is right until I am convinced by incontrovertible arguments that I am wrong and that privilege I am only too glad to grant to any of my worthy opponents.

In the practical part of this paper I have had the kind assistance of Messrs. H. Engelhardt and O. E. Winters of my laboratory.

For the assay of opium 80 different methods have been recommended, many of which, naturally, have only doubtful value. Most of these methods depend on a crystallizing process, that is, the opium is extracted by a suitable solvent and from the solution either as such or in concentrated form after the addition of an alkali, the morphine is allowed to crystallize. In about 50 (that is about 65%) of these methods water is used as a menstruum and from the aqueous solution after the addition of alcohol or ether or acetic ether or a mixture of these and a slight excess of ammonia water the morphine is allowed to crystallize. In about 14 (that is about 18%) of these methods the opium is extracted with lime water, the calcium salt of morphine thus obtained is decomposed by ammonium chloride and the liberated morphine is allowed to crystallize in the presence of alcohol or ether, or of both. The extraction of opium by lime water has several decided advantages, viz:—calcium hydroxide does not dissolve the greater majority of the opium alkaloids such as narcotine, narceine, etc., as well as meconic acid, and by its use many of the resins present in the opium are eliminated. These, however, do not overcome its several disadvantages, the principal one of which is that it does not extract all or as much morphine from opium as the other methods. I may have the most perfectly devised and scientifically accurate method of assaying gold in copper or nitrogen in the air, but if it yields me less than is actually present or is determinable by other methods it has little practical value to the chemist.

Other methods depend on the property of morphine to be easily oxidized and in them certain reagents which are added to the morphine solution are reduced and the reduction products determined volumetrically.

In other methods, the morphine is estimated either colorimetrically or polarimetrically or with potassium-mercuric iodide solution.

The methods in which the morphine is allowed to crystallize have the one great disadvantage, to wit, that, *with the exception of that of the U. S. P.*, the morphine

is allowed to crystallize from too dilute solutions. It is a very well-known fact that morphine is not entirely insoluble in water or in diluted alcohol or in mixtures of water, alcohol and ether, especially in the presence of an alkali. This solubility is naturally materially increased by the presence of resins and is also dependent on the temperature at which the crystallizing liquid is allowed to stand. In most of these methods the proportion of opium to aqueous liquid is about 1 : 10, while in the U. S. P. method the proportion is only 1 : 5; naturally the results obtained by the latter method are considerably higher than those obtained by the other methods, because less morphine is lost by solubility in the mother-liquors.

Experiments to shake out the morphine with a suitable immiscible solvent such as hot chloroform, amyl alcohol, etc., have repeatedly been reported. By these solvents, however, a great amount of the resins is extracted from the opium also, which render the final titration extremely difficult. About four years ago the chemists of the Bureau of Chemistry at Washington worked out some methods by which the morphine was extracted at first with a mixture of alcohol-chloroform and then with chloroform alone. These methods are rather complicated and have to be adhered to in every detail, but the results are quite satisfactory. The shaking out of the morphine is a very tedious process, inasmuch as at times nearly 20 shakings with the solvent are necessary to remove all the morphine from the solution. Later on, Buchbinder recommended shaking out the alkaloid from the alkaline solution with chloroform containing 5 *per cent.* of alcohol. By this modification the shaking out process is shortened considerably.

In 1912, Anneler (*Archiv. der Pharmacie CCL*, page 187) reported on some experiments made in order to estimate the morphine in pantopon, which is a mixture of the various opium alkaloids in the form of their hydrochlorides. He recommended using a mixture of equal volumes of isobutyl-alcohol and chloroform, having found that 100 parts of such a mixture dissolve 1.7 parts of morphine. This menstruum is without doubt the most convenient solvent for morphine, and since the publication of this article we have applied this mixture exclusively in control assays for estimating morphine both in opium, in galenical preparations of opium, in pills, tablets, elixirs, etc., containing morphine. This shaking out process, like all other processes of this kind, has one great advantage over the crystallization process in that by it the total amount of morphine present in the drug or in the preparation is determined, there is no aliquot part feature; at the same time the assay process is a very rapid one and can be carried out, for instance in the case of opium, easily within about five hours. The details of the process which I apply are the following:—

POWDERED OPIUM.

Four gms. of the powdered opium are macerated with water in the regular way either by allowing to stand over night or by shaking for three hours, then exhausting the opium with water and evaporating the combined filtrate and wash-water to about 50 cc. The solution is then transferred to a separator, made decidedly alkaline with caustic soda solution or caustic potash solution which holds the morphine in solution as alkali morphinate. The solution is then shaken out with several portions of 20 cc. each of ether in order to remove the alkaloids of opium other than morphine, which are present in the free state. The alkaline

solution is then acidulated with sulphuric acid to convert the morphine into morphine sulphate, made again *slightly* alkaline by the addition of ammonia water and is then extracted by adding several portions of a mixture of equal volumes of chloroform and isobutyl-alcohol, until all the alkaloid is removed. The isobutyl alcohol-chloroform solutions are then filtered into a distilling flask, the filter paper washed with fresh isobutyl alcohol-chloroform, the chloroform distilled off under ordinary conditions and the isobutyl-alcohol later under diminished pressure. If the original mixture is distilled under diminished pressure bumping very frequently takes place. This can be avoided by first distilling off the chloroform under ordinary pressure. The residue in the flask is taken up in an excess of standardized acid; the acid solution is well diluted with water, and, after the addition of a few drops of methyl red, the excess of acid is titrated back with standardized alkali. From the amount of acid used, the morphine is calculated volumetrically.

For the assay of *Gum Opium* the following modification should be used: 20 gms. of opium representing an average sample of as many balls is exhausted in the regular way by means of water, the combined aqueous liquids are made up with sufficient water to obtain 500 cc., and 100 cc. of this solution are subjected to the assay process. Thus a fairly representative sample of the opium can be obtained. We append below some comparative results on the same drug by the two methods.

Gum Opium U. S. P. Method	*Gum Opium Shaking Out Method*
Sample I 11.34%	Sample I 12.89%
	12.80%
Sample II 11.37%	Sample II 12.35%
	12.29%
Powdered Opium U. S. P. Method	*Powdered Opium Shaking Out Method*
Opium A 12.24%	Opium A 13.86%
Opium B 11.7 %	Opium B 13.25%

The assays were made in duplicate by two chemists. In order to find out whether or not the method works in the hands of a worker entirely inexperienced with the method, the opium assaying 12.24 *per cent.* of morphine by the U. S. P. method was estimated by this chemist who found 13.58 *per cent.* of morphine, a figure not varying too much from 13.86 *per cent.* as found by the other two chemists.

AS APPLIED TO TINCTURE OF OPIUM.

From 25 cc. of the tincture, the alcohol is expelled by heating; the residual liquid acidulated with sulphuric acid, the solution filtered into a separator and the filter and residue washed with small portions of water until the combined filtrate and wash-water measure 50 cc. This is then treated as the concentrated aqueous extract in the powdered opium assay.

By this process the following comparative results were obtained on the same laudanum sample:—

U. S. P. Method	*Shaking Out Method*
1.23% morphine	1.33% morphine

I have frequently applied the shaking-out method for estimating the morphine in unfinished tinctures of opium, i. e., the strong tincture before being diluted to

the standard. From the amount of morphine obtained I deducted 10 *per cent.* (approximately the amount found in excess over the U. S. P. method by the shaking-out method) and according to the difference thus obtained I diluted the tincture. I invariably found that the tincture thus diluted answered the requirements of the U. S. P. very well. This procedure has saved us a great deal of time in the course of the year we have been using it, since the shaking-out process can easily be carried out in three hours, while the U. S. P. process takes at least 24 hours.

AS APPLIED TO FLUIDEXTRACT OF OPIUM CONCENTRATED.

Five cc. of the fluidextract (four times the strength of the tincture) is deprived of its alcohol by evaporation, the liquid is then acidulated with sulphuric acid and filtered into a separator. The residue on the filter is washed well with several portions of water until the combined filtrate and wash-water measures about 50 cc The assay is then carried out as in the case of the tincture.

AS APPLIED TO FLUIDEXTRACT AND TINCTURE OF OPIUM CAMPHORATED.

The isobutyl alcohol-chloroform method is especially useful in assaying preparations containing only a small amount of opium such as fluidextract of opium camphorated and paregoric. For assaying the fluidextract 25 cc. are used and 50 cc. for estimating the morphine in paregoric. The process is almost identical with that given under fluidextract of opium. Most of the benzoic acid and camphor is eliminated on evaporation and filtering. Any benzoic acid left in suspension does not interfere with the estimation. I append a few results obtained in assaying these camphorated products.

FLUIDEXTRACT OF OPIUM CAMPHORATED.

(Eight times the strength of paregoric without removing the benzoic acid entirely.)

Lot A 0.346% morphine (theoretical strength 0.384%)
Lot B 0.390% morphine (theoretical strength 0.384%)
Lot C 0.372% morphine (theoretical strength 0.384%)

Removing the suspended benzoic acid by first shaking out the acid alkaloidal solution with ether, I found in the same products:—

Lot A 0.374% morphine (theoretical strength 0.384%)
Lot B 0.361% morphine (theoretical strength 0.384%)

Tincture of Opium Camphorated (Paregoric).

Lot D 0.052% morphine (theoretical strength 0.050%)
Lot E 0.056% morphine (theoretical strength 0.050%)

As applied to Extract of Opium.

0.5 gms of the extract was dissolved according to the directions of the U. S. P., the aqueous solution was evaporated to about 50 cc. and the process was then carried out as described under tincture of opium. The results of the assays follows:—

U. S. P. Method	*Shaking-out Method*
Lot F 18.63% morphine (theo. str. 20%)	20.4% morphine
Lot G 20.04% morphine (theo. str. 20%)	21.7% morphine

As applied to Tablets.

Dr. Engelhardt (*D. A. Apoth. Ztg., 1912*, January and February), has reported in detail on the usefulness of the shaking-out method in assaying morphine sulphate tablets. We have made a number of additional experiments in this direction, and we have also assayed tablets of complex composition, containing morphine salts combined with other drugs. We have found that the shaking-out method gives rather good results with tablets containing other alkaloidal extracts, provided the alkaloids present in these extracts are soluble in ether. It would be beyond the scope of this paper to give in detail all the results which we have obtained. We feel convinced, however, that the shaking-out method is the best yet proposed for quantitatively determining morphine in tablets.

As applied to Pills.

Pills, both simple and complex, can be assayed just as conveniently as tablets. The diluents in the pill mass do not apparently interfere with the accuracy of the assay. For instance, we have applied the shaking-out process to Neuralgic, Gross, N. F. pills which as is well known contain in addition to 1/20 gr. morphine sulphate, 2 gr. quinine sulphate, 1/30 gr. strychnine, 1/20 gr. arsenous acid and 1/2 gr. extract aconite leaves. When applying the shaking-out process, described in this paper, we found the pills to contain 1/23 gr. morphine sulphate, a result which without doubt is very gratifying considering the large proportion of other alkaloids present in the preparation.

We have also applied the shaking-out process to morphine preparations containing a comparatively small amount of the alkaloid, for instance, to Elixir Morphine Aromatic which contains, in addition to several other ingredients one grain of morphine sulphate per fluid ounce. By the isobutyl alcohol-chloroform shaking-out method we found in three different lots of this .936 grain, .938 grain and .94 grain of morphine present in one fluid ounce. The shaking-out method can be applied also with advantage to other substances containing small amounts of morphine, such as poppy heads and preparations thereof.

From an experience of more than a year with the shaking-out method using isobutyl alcohol-chloroform as immiscible solvent, we cannot too strongly recommend this method and we trust that many other chemists will try this method and publish their findings or let us hear from them. It is our conviction that the shaking-out method will eventually be made official in the U. S. P. in order to save time and to estimate the *total amount* and correct amount of morphine present in the drug or in its galenical preparation without using correction factors or aliquot parts. As has been pointed out in the first part of this paper all the methods which have been recommended for the estimation of morphine give results that are too low and that vary too much, due to the varying amount of morphine remaining in solution in the crystallization liquid.

In closing, I would like to mention that we devised and worked out this shaking-out method only after most of the assay work on opium of the Proximate Assays Committee had been completed. In fact, I had practically voted to adopt the U. S. P. process as revised by the committee. When the reconsideration of this action came up, I suggested trying the shaking-out method in comparison with the other two methods before the committee, viz., the U. S. P. and lime methods. It received little or no consideration, however, the Proximate Assay Committee

being unfavorable. The stage was set for lime versus U. S. P. and no one could see the shaking-out process.

In conclusion, I think I have proved that:—

First:—The lime method is inferior in every sense, except shorter time of operation, to the U. S. P. method, and is not worthy of adoption in the pharmacopœia of this country.

Second:—That the shaking-out method devised by us is superior in every sense, will eventually be adopted in the U. S. P. and should be adopted now. If not adopted now, then the modified U. S. P. should be adopted by the Revision Committee.

Third:—That the shaking-out process is adapted to determining morphine in practically all kinds of mixtures as well as practically all forms of medication.

Analytical Laboratory, Sharpe & Dohme, August, 1914.

THE LIME ASSAY OF OPIUM.

A. B. LYONS, M. D.

Of the numerous methods that have been proposed for the morphiometric assay of opium, two only seem to have found favor with the authors or compilers of national Pharmacopœias.

In one, the drug is exhausted with water, the solution concentrated to a small volume, alcohol and ether added together with water of ammonia, the mixture shaken well and allowed to stand for a specified time for separation of the morphine in crystals.

In the other, the powdered opium is mixed with lime and a certain proportion of water, allowed to macerate, with occasional stirring during half an hour, the solution filtered and an aliquot portion of the filtrate treated with ammonium chloride which causes the morphine to separate in crystalline form.

The advantages claimed for the second method are (1) rapidity of execution; (2) superior purity of the morphine obtained, owing partly to the fact that lime combines with morphine forming a very soluble compound—a property not shared with it by narcotine or most of the other alkaloids of opium—partly because the lime throws out of solution certain organic acids and other compounds which otherwise are liable to be thrown down with the morphine; (3) alleged uniformity of results.

Against the lime method it is urged: (1) It involves unavoidably the principle of the aliquot part; (2) crystallization of the morphine is from a more dilute solution than in the first general method, hence more of the morphine is held in solution so that an arbitrary correction is generally prescribed to compensate this loss. (It is generally admitted that there is also loss of morphine in the first assay method, in which no correction factor is generally prescribed;) (3) the assay requires that the opium be in the form of a powder, whereas

opium is imported in a moist condition, so that it must be dried (the loss of weight noted) and reduced to a powder—operations which greatly lengthen the time required for an assay.

Before entering into any discussion of these claims and counter claims, it is necessary to enter more in detail into the particular method of carrying out the respective assays. A typical lime assay process is that of the French Codex. Somewhat simpler and more familiar to American pharmacists is the Stevens assay. In the latter four grammes of powdered opium are mixed with two grammes of calcium oxide, the powder made into a paste with 10 cc. of distilled water, 19 cc. more of distilled water are added and the mixture is stirred occasionally during half an hour. The magma is then transferred to a filter and exactly 15 cc. of filtrate is taken for the assay, assumed to represent 2 grammes of the opium. To this is added 4 cc. of alcohol, 10 or 15 cc. of ether and 0.5 grammes of ammonium chloride. The mixture is shaken frequently during 30 minutes, then allowed to stand over night to complete the crystallization. The crystals of morphine are then collected in a small funnel loosely plugged with absorbent cotton, washed with morphinated water, transferred to the flask in which the crystallization process was carried out, the morphine being finally determined by titration with volumetric acid and alkali.

The first question that arises is as to the accuracy of the aliquot part taken. This will depend on the increase in volume of the fluid, due to the dissolved extract and lime. A number of experiments made with several different samples of opium have showed that where slaked lime is used, the increase in volume over 29 cc. is about 0.6 cc. covering a range from 0.5 to 0.75 cc. In the assay, the increase is taken as 1 cc. and the allowance thus made for incomplete exhaustion of the drug, amounting to from 0.8 to about 1.7 *per cent.* of the total may be considered reasonable. It is considerably less than the allowance in the assay process of the French Codex, and in other official processes. It is to be noted, however, that if calcium oxide is used instead of calcium hydroxide, this allowance is increased to 3 *per cent.* or more, since the oxide combines with and fixes one equivalent of water.

It is sometimes difficult to obtain a filtrate measuring as much as 15 cc. In such case, the filter containing the residue may be enclosed in a small piece of cheese cloth or muslin, and the residual fluid pressed out and then filtered through a small filter.

Measurement of the 15 cc. of filtrate must be made as accurately as possible —best with a measuring pipette. Of course, exposure of the filtered solution to air, particularly to the air exhaled from the lungs, must be minimized, by receiving the filtrate in a small flask, keeping the funnel covered with a watch glass and conducting the filtration as rapidly as possible to guard against any precipitation of calcium carbonate.

It is a question whether addition of any alcohol to the filtrate is advisable. Larger and whiter crystals of morphine are formed if the alcohol is added, but the separation of the morphine by crystallization under the ordinary conditions of the assay, is certainly less complete than if the alcohol is omitted. A careful study ought to be made of the influence (a) of alcohol, (b) of temperature,

(c) of the amount and kind of shaking, and (d) of the quantity of ether added. It should be understood that when morphine is set free in presence of ether or of a mixture of ether and alcohol, the alkaloid is largely transferred in the shaking to these solvents, and that at the end of the crystallization, the residual morphine will be found chiefly in the ethereal fluid.

I have found by experiment that when ether alone is used the residual morphine, after 14 hours, is almost a negligible quantity. When alcohol is present a notably larger quantity is held in solution. Whether it is possible to determine to a close approximation just how much of the alkaloid will be held in solution under prescribed conditions of shaking, temperature and time, can only be ascertained by a series of experiments. Inasmuch as the loss of morphine, where only ether is used, is inconsiderable, it seems to me unwise to use the alcohol—unless it can be shown that other alkaloids are thus prevented from crystallizing with the morphine, of which there seems to me practically no possibility.

Stevens' method of collecting the morphine and determining it by titration is neat, rapid, and I believe beyond criticism.

When the lime assay is carried out, as above detailed, the possible sources of fallacy are reduced to the following: (a) possible failure to extract the whole of the morphine by the half hour maceration; (b) possible presence in the morphine of other alkaloids; (c) possible inexactness of the aliquot part of the lime solution; (d) possible inexactness in the *titre* of the volumetric solutions used.

(a) It is not unlikely that in inexperienced hands there may be failure to extract the whole of the morphine in the initial maceration. It is my belief that if the directions for extracting the opium are carried out with reasonable care, practically the whole of the morphine will go into solution, but it is not easy to determine this experimentally. Results of comparative assays by the lime and aqueous extraction methods are not conclusive, particularly when such results have been reached in coöperative investigations.

In case it should be made to appear that powdered opium is not always completely exhausted in the prescribed routine a different procedure might be adopted in which the opium would be first exhausted with water, as in the U.S.P. assay. This, however, would sacrifice the great advantage of economy of time in the lime assay. It would, on the other hand, make the lime assay applicable to moist crude opium and with only slight modifications to all galenical preparations of opium, except the camphorated tincture.

(b) Presence in morphine separated in the lime assay of by-alkaloids could hardly be expected considering the manner in which the alkaloid is separated. At all events, alkalimetric titration indicates a high degree of purity in the crystals. The French Codex directs to wash the crystals with benzene (benzol) to remove such possible contamination. I do not think the precaution is necessary, but I have not tested the question experimentally whether benzene will reduce the weight of the crystals.

(c) The question of exactness of the aliquot, I have already considered. Of course, it is important that measurements of the water and the lime solution

should be made with exactness, and that the temperature at which these measurements are made should be practically the same, though not necessarily 25° C., the official standard temperature.

Greater exactness can, of course, be secured by weighing the fluids instead of measuring them. If this is done a certain arbitrary allowance must be made for dissolved lime and extractive. It would be safe to make this allowance one-third the weight of the opium present, i. e., for a quantity of solution representing 2 grammes of opium, 0.667 gm. If 4 grammes of dry opium have been treated with 29 grammes of water, the aliquot representing 2 grammes of opium will be $14.5 + 0.667 = 15.167$ grammes of the lime solution.

(d) To secure exactness in the result of the titration, it is only necessary to standardize the volumetric acid used on pure recrystallized morphine, dried over sulphuric acid. The conditions of the titration as to dilution of solution, etc., should be practically the same as in the assay; it is particularly important that the same indicator be used. For the professional chemist whose laboratory equipment is complete, there is no difficulty about so simple a matter as making an alkaloid determination by titration. In absence of such advantages a routine may be adopted which insures exact results in spite of difficulties.

One must be sure in the first place of the exact neutrality of the distilled water to be used. Put into a small flask a sufficient quantity of the water—which, although distilled, may have absorbed traces of ammonia, or if acid vapor —add a few drops of the indicator, and if necessary bring to exact neutrality by adding very dilute acid or alkali. To dissolve the morphine use this neutral distilled water with the addition of the requisite quantity—say 10 cc.—if decinormal hydrochloric acid, very accurately measured. For alkali, use half strength lime water, i. e., lime water diluted with an equal volume of distilled water (which need not be strictly neutral), and filtered if necessary. Ascertain the exact strength of this solution by titrating with it 10 cc. of the volumetric acid, diluted with some of the neutral water previously prepared. If it requires 46.5 cc. of the diluted lime water, then $46.5 \div 10 = 4.65$ cc. of the alkali correspond with 1 cc. of decinormal acid. If the titration of the excess of acid after solution of the morphine, has consumed 38.45 cc. of the diluted lime water, deduct this figure from 46.5 and divide the remainder by 4.65. The quotient (1.73) represents the value in decinormal terms of the excess of acid. Hence, the morphine has required for neutralization $10.00 - 1.73 = 8.27$ cc. of decinormal acid, of which each cc. represents 30.3 milligrams of morphine, and $8.27 \times 30.3 = 250.581$ mg. is the quantity of morphine indicated by the titration.

If an aqueous solution (from any form of opium, or from a galenical preparation of that drug) is to be assayed by the lime method, it is to be brought to such a concentration that 30 cc. of it will represent 4 grammes of opium, 2 grammes of dry slaked lime are to be added, the mixture allowed to stand with occasional shaking 20 minutes, filtered and 15 cc. of the filtrate taken for the assay, to be conducted exactly as above described. In case the opium preparation contains alcohol, this must be driven off by evaporation on the water-bath. The official tincture may advantageously be diluted with twice its volume of water, the mixture, after standing 20 or 30 minutes, filtered and an aliquot part of the

filtrate, representing 4 grammes of opium evaporated to a volume of 30 cc. Otherwise 40 cc. of the tincture, after addition of about 20 cc. of water, may be evaporated until alcohol is dispelled, the concentrated solution transferred to a cylindrical graduate, the container rinsed with successive small portions of water to bring the volume of the fluid to exactly 30 cc.

Experiments should be made to ascertain whether at a low temperature (15° C. or below) crystallization of morphine in the final operation is practically complete in six hours, or in four hours even, provided the mixture is shaken continuously during 10 minutes, or at frequent intervals during 30 minutes after the ammonium chloride is added. (Note that the quantity of the latter salt must not exceed 0.5 grm.; 0.3 gm. should be sufficient.)

Just how the assay would be affected by the accidental presence of a notable quantity of sugar, is an interesting query. Of course, it would increase the amount of lime taken into solution and would therefore, call for a larger quantity of ammonium chloride, which again might cause a larger proportion of morphine to be held in solution.

Advocates of the Squibb assay method argue that that process should be preferred to the lime method for the following reasons: (1) The yield of morphine is greater; (2) the process is not complicated by the use of an aliquot part; (3) crystallization of the morphine is from a more concentrated solution, and hence should be more complete; (4) no arbitrary correction of the result is required; (5) the morphine is obtained in bold crystals, which, by titration, are shown to be free from any considerable impurity; (6) the assay is free from the sources of possible error to which the lime assay is subject—particularly,

Advocates of the Squibb assay method argue that that process should be maceration in the initial steps.

In rejoinder, advocates of the lime process say:

(1) Deficiency in morphine yield is not unavoidable in a lime assay. It has resulted chiefly from remedial defects in the details of the lime assay as generally practiced. Two main causes have been the use of alcohol, as well as ether, to facilitate crystallization and the prescribing of too large a quantity of ammonium chloride. Besides this, due attention has not been given to the temperature during crystallization and to the amount and method of shaking prescribed. It is well known that in the Squibb method, emphasis is laid on vigorous and prolonged shaking, and results are greatly influenced by neglect of this detail.

I am sure that the same opium solution assayed by the lime method, as hereinbefore described, yields practically the same quantity of morphine as by the Squibb assay. I am not equally positive that the lime method applied to opium in powder will give results correspondingly close to those of the Squibb assay, although it is my belief that they will. If so, the great saving of time and labor demand giving preference to the lime assay.

(2) The aliquot part, which is freely used in other assays, does not condemn an assay process. I have shown that for practical purposes, the aliquot of the Stevens assay (if calcium hydrate is used in place of calcium oxide) may be accepted as reasonably exact. If greater accuracy is wanted, it is easy to weigh the fluids instead of measuring them.

(3) It is apparently true that crystallization in the lime assay is from a more dilute solution than in the Squibb assay, but the conditions for crystallization are more favorable after all, in the former case. It is to be remembered, too, that the crystallization takes place in either case rather from the ethereal than from the aqueous solution. Experiments have shown that residual morphine, under proper conditions, is likely to be less in the former case than in the latter.

(4) If the last statement is true, an arbitrary factor is as necessary in one assay as in the other, the difference in amount being likely to be in favor of the lime process, and compensated at that by a negative correction in the Squibb assay for impurities in the crystals of morphine.

For practical purposes, the small correction may be ignored as immaterial, provided one or the other of the methods in their most approved form be taken as a basis for the commercial valuation of the drug.

(5) Where determination of the morphine is to be made by titration rather than by weighing, the smaller crystals are preferable, as being more quickly dissolved.

(6) The sources of possible error in the lime assay have already been shown to be inconsiderable and largely avoidable by slight modifications in the detail of the assay process. Loss of water by evaporation need not occur to any appreciable extent if obvious precautions are taken.

Confessedly neither of the assay processes under discussion are capable of yielding results of a high degree of exactness. The problem of singling out one from a number of alkaloids which exist in combination with a complex mixture of organic substances, and separating this in a reasonable state of purity by a simple and easily executed process is a baffling one indeed. The lime assay gives the neatest solution we are likely to reach.

Otherwise we may remove, by suitable solvents, the other alkaloids and then by some other solvent to take out the morphine in a state of purity. More than one process involving this principle has been devised—notably the Gordin-Prescott method, in which the solvents employed are successively benzole and acetone, and several shaking-out methods that have been strongly recommended in recent years, in which by-alkaloids are removed from a lime solution by shaking with chloroform, the morphine being afterwards set free by addition of ammonium chloride and separated by shaking out with alcohol, chloroform or some other solvent.

Presumably the results obtained are more nearly exact than those by the process now official, but until they have been put to the test of actual use under varying conditions, it is best to use them only tentatively and as confirmation of results more easily reached by the more familiar process.

DISCUSSION.

HARRY M. GORDIN, of Chicago:—There are two difficulties in the lime method. One is that the final liquid is so deeply colored that the end-point in titration cannot be clearly observed. This, however, can be eliminated by a method which I shall publish in the near future.

The second difficulty consists in that the vacuum distillation usually is accompanied by such violent bumping that some of the liquid may be lost by being thrown out of the distilling flask. How did you avoid this difficulty, Dr. Engelhardt?

DR. ENGELHARDT:—As I pointed out already this latter difficulty can easily be overcome

by first distilling the chloroform under ordinary pressure and then distilling the isobutyl-alcohol under diminished pressure. While doing so bumping will never occur.

MR. CHARLES E. CASPARI:—With reference to these methods for the isolation of morphine from opium. The lime method does not yield all the morphine which is present in the opium. While it may be all right for comparative purposes, it does not give absolute knowledge of the actual amount of morphine which is present, either in opium, or opium preparations, which ever may be under examination.

I have had some experience with the method of shaking out with chloroform and alcohol. a modification of Dr. Engelhardt's method, as presented here, and I have found it to yield immediate and certain results, and I have been very much pleased with it. I have used it particularly on tablets,—morphine mixed with other ingredients—and found that it was very satisfactory.

From my knowledge of the methods, I would say that I like the shaking-out method best. It is the simplest, and quickest, and as far as I can determine, the most accurate.

MICROSCOPY OF CINCHONA BARKS AND ADULTERANTS.

C. W. BALLARD, M. A., PH. C., PHAR. D.

The question of the identity, both macroscopic and microscopic of the various species and varieties of cinchona, has been one of great importance for many years. The difficulties in the way of proper identification, are increased greatly, by the necessary admission of many hybrids of the official species. Of course, the drug is to great extent sold upon assay, but this does not relieve the pharmacognosist of the task of deciding, whether a sample submitted, is official or recognized, as there is always the possibility of the addition of non-official barks to a lot of genuine, and the more likely is such addition, when the drug is in powdered form. The chemistry of cinchona has been treated at great length in the proceedings of this Association, and, likewise, several papers have been submitted upon the macroscopic or gross appearance and structure of the drug, but, in a search of the publications, I fail to find much reference to the microscopy.

The results, in many cases, are not quite as definite and satisfactory as I would desire, and this lack of absolute uniformity, is undoubtedly due to hybridization in cultivation. An excellent article upon the subject of cinchona is given by Vogl, in his text book on Pharmacognosy (German), but this is not accessible to all, as I do not know of an English translation of the work. For this reason, I append a useful classification of the histological characteristics of the various cinchonas taken from this text book. (Dr. A. Vogl, *"Pharmacognosie," Carl Gerold's Sohn, Vienna*, 1892.)

Macroscopic characteristics are treated at length by so many authorities that no reference will be made to them, excepting, if necessary, to more fully explain microscopic structure. I append a list of the literature available at the library of Columbia University College of Pharmacy upon the subject. A further list, and one which is complete up to the date of publication, is given in the English translation of Fluckiger's "Cinchona Barks," by F. B. Power (Blakiston, 1884). In this connection, I would make special mention of a folio volume in French, *"Historie Naturelle des Quinquinas,"* M. H. A. Weddell, 1849, which contains excellent illustrations in natural color of many specimens.

CINCHONA CALISAYA AND CINCHONA LEDGERIANA:—As these two species are found to comply with the official requirements as regards alkaloidal content, we may for purposes of comparison consider them as standard. For descriptions and illustrations of histological structure, we cannot do better than consult the material given under the head of Cinchona in the following references: Vogl, *"Pharmacognosie"*; Vogl, *"Atlas zur Pharmacognosie"*; Moeller, *"Pharmacognosticher Atlas."*

As will be ascertained by the above references, the histological elements found in powdered Calisaya or Ledgeriana barks are: cork, flat, thin-walled, with brown contents; parenchyma, thin-walled, containing starch and crypto-crystals; characteristic bast fibers; medullary ray tissue; thin-walled tissue of laticiferous ducts; tissues of the lichens attached to the bark.

Cross sections of barks of both these species, exhibit the following picture. An outer corky layer, brown in color, composed of flat quadrangular cells, the outer portions being very thick, and not being as distinct to view as the inner part. Below the cork is the parenchyma of the middle bark containing numerous bast fibers either isolated from one another or in groups of two to five. In this parenchyma will be found cells containing crypto-crystals and a few containing small starch grains. The laticiferous ducts in this region are circular, thin-walled and rather larger than the parenchyma cells. Coming to the inner bark, we notice the medullary rays made up of flat rectangular cells with long axis toward the cork, these being usually one to three cells in width. Between them are located the bast fibers, for the most part in groups of four or more. The parenchyma of this region, is composed of small cells, a few of which contain starch. By some authorities, stone cells are said to occur in the middle portion of these barks, but they were not found in the specimens examined.

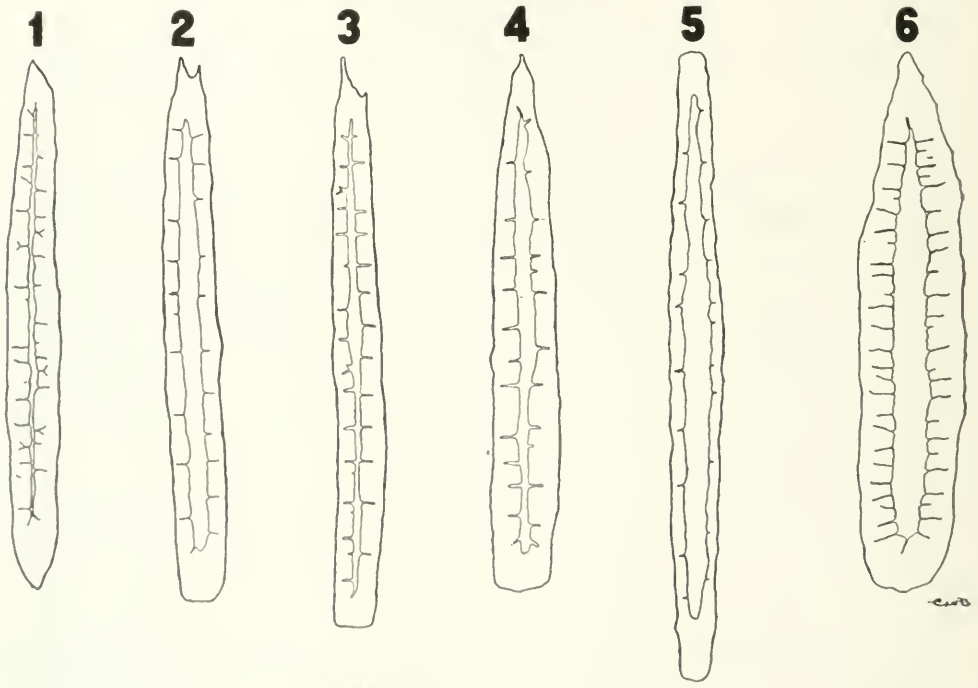
Cinchona Ledgeriana possesses a larger quantity of bast fibers than Calisaya. The bark parenchyma also contains starch of moderate size, whereas calisaya parenchyma contains very little starch, and that which is present is very small. In many of the bast fibers of Ledgeriana, the ends are double pointed, whereas all other species have single pointed ends.

The indentations or pores of the inner wall of the bast fibers of Calisaya and Ledgeriana are somewhat deeper than those of Succirubra, but are not as broad The cavities of the fibers in Calisaya and Succirubra are about the same size, but those of Ledgeriana are generally much larger. The bast fibers of all three, are striated in a direction parallel to the length of the fiber, but the striations of Ledgeriana, are fewer and coarser than in the other two. In many instances in Calisaya, the pore begins at the cavity as a single narrow opening, but, upon penetrating the wall of the fiber for a short distance, it separates or branches out into two parts. While there are double pores in Succirubra, the opening from the cavity is very wide, usually wider than the pore itself.

CINCHONA SUCCIRUBRA:—In a cross-section of succirubra bark, we have the outer layer of cork similar to that in the preceding species. The middle bark consists of thin-walled parenchyma cells, containing much starch and many crypto-crystals, and within this parenchyma are laticiferous ducts which are very large. Very few bast fibers are present in this region. In the inner bark are found the medullary rays and bast fibers, the latter usually in groups running parallel o

the rays. The rays are usually three cells in width and are almost parallel to one another.

In the powder, the bast fibers are the most prominent element, being more numerous and rather more slender in this variety than in Calisaya. The fibers are striated, but the striations are coarser than Calisaya. Three types of fiber were noted: those with both ends sharp-pointed; those with one end square and the other pointed; the third with one end square, the other being square excepting for a projecting point, similar to the peculiar fibers of Ledgeriana except that those of the latter have a double point. The variety with one narrow projecting point predominate. The indentations of the inner wall, are wider but not as deep



COMPARISON OF TYPICAL FIBERS.

1. Cinchona calisaya.
2. Cinchona ledgeriana.
3. Cinchona succirubra.
4. Cinchona officinalis.
5. Cuprea Bark.
6. Maracaibo Bark.

as those of Calisaya and Ledgeriana. There are, in many fibers, double pores which have wide openings from the cavity, thus distinguishing them from Calisaya.

One fact noted, was that the parenchyma of this variety, is for the most part filled with starch; also the total amount of starch in the field is considerably greater than in Calisaya or Ledgeriana. This feature, although not an altogether certain and definite one, may furnish a clue to the derivation of a sample.

One other element which may be found in this variety and which may be rather confusing at times is lichen tissue.

CINCHONA OFFICINALIS *(Loxa Bark)*:—The transverse sections of specimens of this variety exhibit an outer corky layer, to which lichens may be adherent.

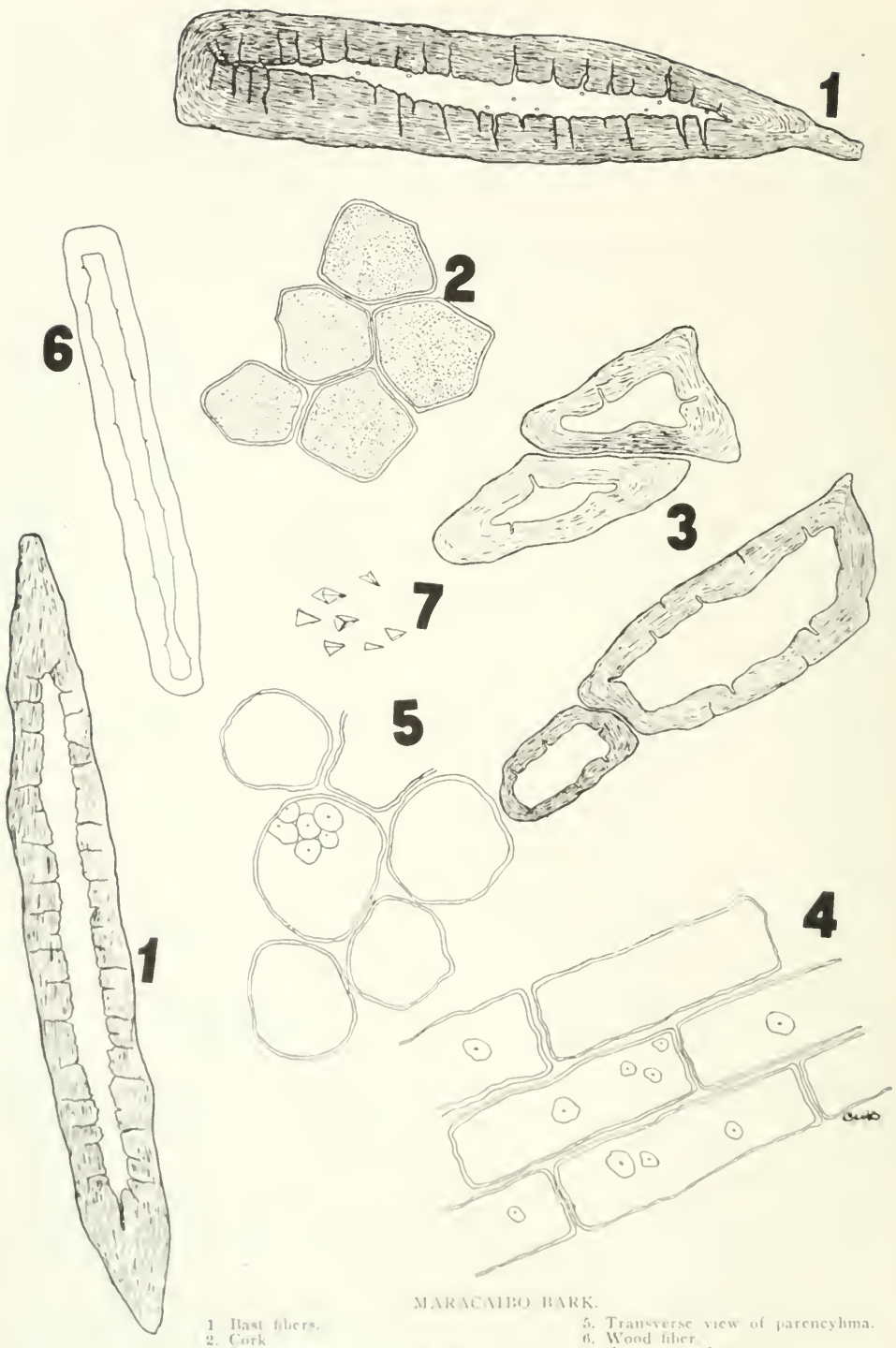
The cork cells are of the usual type, rectangular, small, thin-walled and brown. Below the cork is the parenchyma of the middle bark containing a few small laticiferous ducts. Bast fibers, if present in this region, are very few in number. In the inner bark, occur the medullary rays composed of large rectangular cells, each ray running parallel with the others and being somewhat wider as they approach the middle bark. These rays are two cells wide in the inner bark, but expand to three or four cells in width, upon reaching the middle region of the specimen. Between the rays occur bast fibers, singly or in groups of two to four, and have very small cavities. The remaining space between the rays, is filled in with the bark parenchyma interspersed with the sieve cells.

The powder of C. officinalis contains the usual elements found in the true cinchonas. The fibers and parenchyma are of about equal prominence. The structure of the cork cells is easily seen, but the fibers are not as numerous as in the other official varieties. In a majority of cases, they are flattened at one end and sharp pointed at the other, although a few are pointed at both ends. The cavity is very narrow and the indentations or border pores, which are in all cases single, extend to the outer margin of the fiber. Striations are found running parallel to the long axis of the fiber. The parenchyma in the powder, is usually in very good condition and is always more or less filled with small starch grains and small crypto-crystals. Medullary rays are large and easily seen in the powder, the individual cells being rectangular and occurring in groups attached to the fibers.

Cuprea Bark *(Remijia pedunculata)*:—This substitute for the genuine cinchonas, is not entirely worthless, although of an entirely different genus. It contains some cinchona alkaloids, and is therefore more likely to escape detection during assay processes.

The cross-section of this bark shows a few layers of thick-walled brown cork cells at the outer margin. The middle bark contains groups of characteristic, yellow, stone cells, large and moderately thin-walled, usually filled with starch or reddish-brown contents. Laticiferous ducts are said to occur in some specimens, but I did not observe them in two out of three specimens examined. The inner bark contains the medullary rays and groups of densely-packed, small, but thin-walled bast fibers. The rays are very irregular as regards direction and width. In many cases they are wavy and not parallel with each other or extending through the bark at right angles to the cork, as in genuine barks. The individual cells of the rays are rather long, and either rectangular or circular, being filled with reddish contents, making them much darker than the surrounding cells. In many specimens, the rays broaden out upon reaching the middle bark, as in C. officinalis and merge almost imperceptibly with the parenchyma of this region. In width, the rays vary from one to four cells. The bark parenchyma and sieve-tissue of the inner bark, is almost entirely displaced by the densely-packed bast fibers.

The powder of this variety, is characterized by numerous stone cells and bast fibers, square or rounded at the ends, and occurring in groups arranged end to end. Their walls are very thin and the cavities of these fibers are large, but the inner walls are not, markedly, indented as in genuine species. The stone cells



MARACAIBO BARK.

1. Bast fibers.
2. Cork
3. Stone cells.
4. Longitudinal view of parenchyma
5. Transverse view of parenchyma.
6. Wood fiber.
7. Cryptocrystals.

are square, or polygonal, with a few circular shape, finely striated with deeply-indented inner margin. Some are filled with starch, others with reddish-brown contents. The medullary ray tissue, is very prominent in the powder both in longitudinal and transverse section. It is adherent to the short fibers and the bark parenchyma. Many of the parenchyma cells are filled with starch. Crypto-crystals are present in this powder, but are less numerous and smaller than in the genuine barks.

The peculiar fibers render this adulterant very easy of detection, and the stone cells render such finding certain.

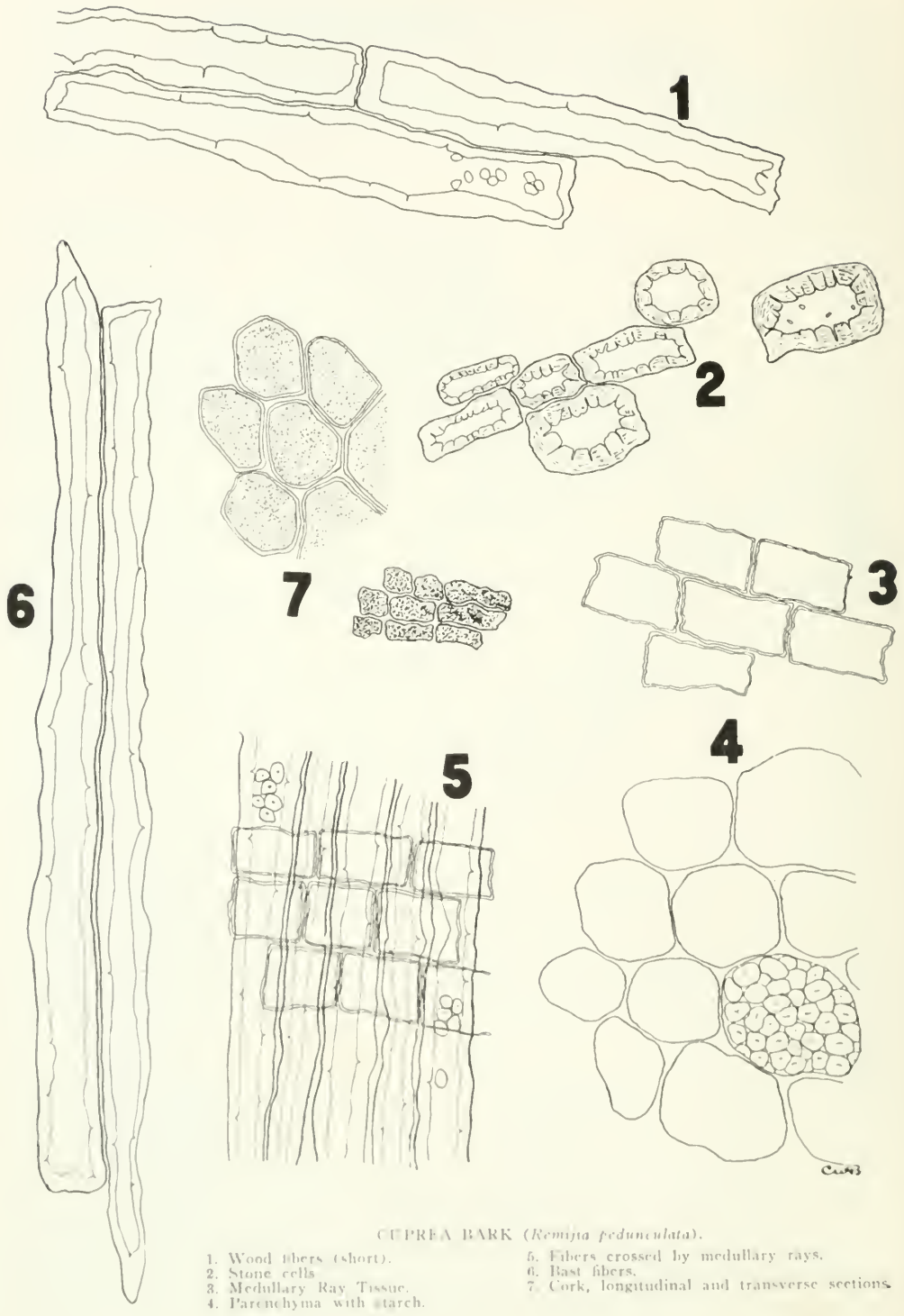
Maracaibo Bark:—Maracaibo bark has been used very recently as an adulterant of the yellow cinchonas, especially that sent to market in chip form. It is not, in any sense, a purely theoretical adulterant, or one which might be thought to be of use for nefarious practice, for several samples of cinchona have consisted in part, and in some cases the greater part, of this spurious bark. Its botanical origin seems to be rather obscure, and it is not mentioned under the above commercial name in most scientific works.

The transverse section of most samples, shows very little corky tissue, as this peels away very easily. The middle region of the bark, contains many groups of large thick-walled yellow fibers and few yellow stone cells. Laticiferous ducts are also present. The parenchyma is of small irregular brown thin-walled cells. The inner bark consists of very small, and dark-colored medullary rays, usually two cells in width; the rows being comparatively far apart as compared with all other barks. Between the rays, we find groups of large, yellow bast fibers and rather large quantities of small, irregular thin-walled parenchyma. The fibers are wider than any other related bark, but are not as numerous as in *cuprea*.

In powdered form, the bast fibers are, as in the true cinchonas, most prominent. They are considerably wider than fibers of the true species, and are very coarsely marked with striations running parallel to the outer margin. Both ends of the fibers are sharp-pointed. The cavity is very large, and the indentations extend almost completely to the outer margin of the fiber. The wood fibers which are present, are about as long as the bast, but are very slender, thin-walled, with square ends and filled with reddish-brown contents. The stone cells are large, triangular or rectangular in shape, yellow in color, with thick walls. The cavities of these stone cells are marked by many indentations or pores and they may be filled with starch. Numerous well defined crypto-crystals are present, many of them being very large.

Renewed Bark:—A transverse section was prepared from a sample of the so-called renewed bark, and examined to discover any changes brought about by the renewing-process. This renewing, or stripping, of the outer bark from the tree, and the covering of the bared places, with moss or material to prevent access of light, is said to yield a bark much higher in alkaloid than the ordinary.

In renewed bark, the thick, brown, corky layer is of course absent, although a small amount may remain. In the region which, in an untreated bark, would correspond to the middle bark, we find at the outer edge several rows of flat, almost perfectly rectangular cells, resembling cork but not deeply-colored; they representing secondary cork formation. Below this secondary cork, is a wide



CUPREA BARK (*Remijia pedunculata*).

1. Wood fibers (short).
2. Stone cells.
3. Medullary Ray Tissue.
4. Parenchyma with starch.
5. Fibers crossed by medullary rays.
6. Bast fibers.
7. Cork, longitudinal and transverse sections.

zone of circular parenchyma cells, in which remains of the previously existing medullary rays may sometimes be seen. A few small laticiferous ducts are also present in this region, but bast fibers are entirely wanting. In the region corresponding to the inner bark, are the true medullary rays, two or three cells in width, and of large but narrow cells. The bast fibers in this region, are very numerous with thick walls, small cavity, and, in a majority of instances, a rectangular outline on transverse section. Small amounts of bark parenchyma and sieve tissue also occur between the rays.

In the powder of renewed bark, the most prominent elements are the fibers and the masses of secondary cork.

MEASUREMENTS OF FIBERS IN VARIETIES DISCUSSED.

	SMALL	AVERAGE	LARGE	RELATION OF LENGTH TO WIDTH
C. Calisaya	0.414 x 0.054 mm.	0.659 x 0.061 mm.	0.828 x 0.090 mm.	10-1
C. Ledgeriana	0.495 x 0.045 mm.	0.675 x 0.059 mm.	0.990 x 0.081 mm.	11-1
C. Succirubra	0.540 x 0.045 mm.	0.739 x 0.057 mm.	0.828 x 0.072 mm.	13-1
C. officinalis	0.250 x 0.025 mm.	0.399 x 0.038 mm.	0.575 x 0.050 mm.	10-1
Cuprea (Remijia) ..	0.160 x 0.015 mm.	0.267 x 0.018 mm.	0.423 x 0.020 mm.	15-1
Maracaibo	0.612 x 0.063 mm.	0.783 x 0.094 mm.	1.170 x 0.135 mm.	8-1

SUMMARY OF THE IMPORTANT CINCHONA BARKS ACCORDING TO HISTOLOGICAL CHARACTERISTICS.

(After Dr. A. Vogl.)

A. Barks with cork present.
 I. Bast fibers prominent—radially and tangentially arranged.
 a. Stone cells present in middle bark and outer portions of inner bark.
 Stone cells mostly in middle bark—laticiferous ducts absent.
 Wood cells (*stabzellen*) in bast region=*C. lancifolia.*
 Wood cells (*stabzellen*) none=*C. lucumaefolia.*
 Stone cells not prominent in middle bark.
 Bast bundles in very perfect isolated groups=*C. macrocaly.*
 Bast bundles toward the last not arranged in series=C. Palton.
 b. Stone cells absent or scattered in middle bark or outer portion of inner bark.
 Bast fibers very thick (90-250 mm.)—Laticiferous ducts wanting or at best very narrow.
 Wood cells present=*C. Pahudiana.*
 Wood cells absent=*C. pubescens.*
 Bast fibers moderately thick=*C. obtusifolia.*
 Bast fibers thin-laticiferous ducts wanting or narrow=*C. officinalis.*
 II. Bast fibers arranged in radial series or rows.
 a. Laticiferous ducts absent.
 Bast fibers thin or equally thick throughout the section—in interrupted radial rows=*C. Pitayensis.*
 Bast fibers unequally thick—the outer ones thinnest.
 Medullary rays of large cells—wood cells present.
 Middle bark without stone cells or with single stone cells=*C. cordifolia.*
 Middle bark with many stone cells=*C. Lancifolia.*
 Medullary rays of small cells—as a rule no wood cells=*C. lancifolia*
 b. Laticiferous ducts present.
 Middle bark containing numerous stone cells.
 Bast fibers thin or very thin.
 partly in interrupted rays—wood fibers present=*C. scrobiculata.*
 In interrupted rays—wood fibers absent=*C. ovata.*
 Bast fibers moderately thick—wide laticiferous ducts in middle bark—very many stone cells—wood cells in bast region=*C. peruviana.*
 Middle bark containing scattered stone cells or the latter absent.
 Narrow laticiferous ducts.
 Bast fibers moderately thick, the outer ones thinner.
 In regular zones—bast region soft=*C. officinalis.*
 Without regular zones=*C. heterophylla.*
 Bast fibers thick the outer ones thicker=*C. ticujensis.*

Wide laticiferous ducts.
Bast fibers very thin in interrupted radial series.
With "KOH," sections give blood-red reaction-bast fibers orange color=*C. succirubra.*
With "KOH," thin sections give yellow or reddish-brown reaction-fibers yellow=*C. cal.* or *ledger.*

B. Barks in which cork is absent.
a. Bast fibers in tangential bundles—moderately thick, bark very soft, brittle and fibrous=*C. lucumaefolia.*
b. Bast fibers expanding in outward direction—many in radial series thin or very thin—for the largest part in uninterrupted lines.
In double lines-cork still present—wide laticiferous ducts and numerous stone cells, fracture rough showing protruding ends of fibers=*C. scrobiculata.*
In single lines—stone cells wanting—short fracture=*C. australis.*
Moderately thick in interrupted single lines.
Bast fibers equally thickened—medullary rays extending directly outward—sharp fracture=*C. calisaya.*
Bast fibers not equally thickened.
Large celled medullary rays=*C. officinalis.*
Small celled medullary rays=*C. micrantha.*

Literature which may be consulted upon the subject of Cinchona.
"Historie Naturelle des Quinquinas," M. H. A. Weddell, 1849.
"Pharmacognosie," Dr. A. Vogl.
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"The Cinchona Barks," Dr. E. A. Fluckiger, translation by F. B. Power.
"National Standard Dispensatory," 6th Ed., Hare, Caspari, Rusby.
"United States Dispensatory," 18th Ed., Wood, Remington, Sadtler.
Columbia University College of Pharmacy.

ASSAY OF HYDRASTIS AND FLUIDEXTRACT OF HYDRASTIS.

H. W. JONES.

The abstracts of proposed changes to be made in the forthcoming revision of the U. S. P. have been greeted with great interest and none perhaps more so than those dealing with the alkaloidal assays. (Jour. A. Ph. A., 1914-7, pp. 984-997.) Among the various assay processes of the U. S. P. (VIII), there was assuredly none more in need of revision than that of Fluidextract of Hydrastis, and the proposed change in the assay of this preparation will no doubt meet with general approval.

Puckner (Pharm. Rev., 1908, 26, pp. 132-137) called attention to the considerable error incident to the use of the eighth revision method, and pointed out the source of error, namely, the carrying down of hydrastine by the berberine hydriodide precipitate with the result that the 50 cc. aliquot part taken did not fully represent 5 cc. of the fluidextract, but gave too low a result. He proposed an excellent modification of the method, although apparently this modification has not met with general approval.

Eldred and Pence (Proc. A. Ph. A., 1908, pp. 836-838) also remarked on the low results obtained through the use of the eighth revision method, and also gave results obtained by a method used in their practice.

Dichgans, working under Prof. Tschirch, in a comparative examination of the assay processes of the different Pharmacopœias (*Apoth. Ztg.*, 29, 46, pp. 516-519),

has also discovered the fault in the method, and through comparison with the methods in use in other countries, has shown the low results obtained by its use.

While there is no doubt that most manufacturers have abided by the eighth revision method in standardizing Fluidextract of Hydrastis, it is evident that this has led to grave errors, for when this preparation was standardized to 2% hydrastine by the eighth revision method, the preparations were in fact some 15% to 20% above this figure. This also worked an injustice on the manufacturer who, instead of being able to obtain a full yield of fluidextract from a given amount of this high-priced drug, was able to gain only 80% to 85% of his possible yield.

The following results were obtained in this laboratory on different samples of Fluidextract Hydrastis and will suffice to bring out the points I wish to make. Preparations 1 and 2 were made in the laboratory strictly according to the U. S. P. (VIII) process for Fluidextract Hydrastis. Preparation 3 was also prepared in the laboratory but contained 20% glycerin instead of the official 10%. Preparation 4 was the product of a well-known manufacturer and was purchased in the open market.

Preparation	Drug assayed by U. S. P. VIII	Fluid extract by U. S. P. VIII	Fluid extract by U. S. P. IX
1	4.15	3.52	4.22
			4.2
2	3.12	2.56	3.14
3	3.83	2.61	3.21
			3.26
4		2.0	2.26

It will be observed that in preparations No. 1 and 2, the assay of the fluidextract by the ninth revision method is slightly higher than that of the drug from which it was made. In preparation No. 3, this peculiarity does not occur, and this is no doubt due to the fact that a 20% glycerin menstruum does not extract the drug as completely as does a 10% glycerin menstruum. In our opinion the apparently high results obtained by the ninth revision method are not incorrect, but the fault lies in the eighth revision method for the assay of Hydrastis, which unfortunately has been carried on into the ninth revision, that is, the amount of ether used in the maceration of the drug (150 cc. ether to 15 g. Hydrastis) is too small to prevent a crystallization of the hydrastin. This has been remarked upon by Dichgans (*Apoth. Ztg.,* 1914, 45 pp. 498-501) who shows that the results obtained by this method are lower than those obtained by the Swiss Pharmacopœia method, or by the method of Caesar & Loretz (*Jahres-Bericht von Caesar & Loretz,* 1913, pp. 155-156), in both of which methods 6 g. of drug are macerated with 120 g. (168 cc.) of ether, or more than two and one-half times as much ether in proportion as is used in the U. S. P. method. This might not be necessary for drugs low in hydrastin, but as an assay method should be applicable to all grades of the drug.

It might be remarked further, that the high results obtained by the ninth revision method for the fluidextract were at first attributed to the hydrastin being contaminated with glycerin. The hydrastin residues were, however, dried to constant weight and showed no appearance of glycerin. To be assured further, the combined ethereal extractions of the fluidextract were washed with several small portions of water in the hope of removing any glycerin which they might

contain, but the final results were practically identical with those first obtained.

The conclusions to be drawn are then, that the ninth revision method for the assay of Fluidextract of Hydrastis is satisfactory; and that the method for Hydrastis might well be reconsidered, and a larger proportion of ether used to extract the drug.

Laboratory of The Wm. S. Merrell Chemical Company, Cincinnati, Ohio.

WHAT IS THE BEST END-POINT OF THE REACTION IN THE FROG-HEART METHOD OF DIGITALIS ASSAY?

L. W. ROWE.

While there are various methods in use for standardizing the digitalis series of heart tonics, the frog-heart method devised and introduced by Houghton,[1] in 1894, has perhaps been most widely used in more or less modified form.

These modifications are specifically due to differences of opinion, as to the proper length of time, after dosing, to note the end-point of the reaction, namely, the characteristic systolic stand-still of the heart or the death of the animal with its heart in systole.

The original method made use of the minimal lethal dose, or smallest dose capable of causing the death with heart in systole, of a majority of the frogs to which a certain amount of the preparation in question had been administered. In a somewhat amplified form[2] the method was presented before this Society in 1909.

In 1902, Famulener & Lyons[3] described a method which has been in use in the University of Michigan Pharmacology Department for some time, according to Edmunds.[4] This consists, in brief, in administering such a dose of a digitalis heart-tonic to a frog, as to cause paralysis of the heart in systole in one hour. Edmund's modification differs only in having complete stoppage of the heart—not only systolic but auricular as well.

Barger and Shaw[5] used the same method of injection, namely, into the dorsal lymph-sac, but the frogs were kept under observation until the heart stopped, which they found was within three hours, if at all.

Fraenkel[6] practically limited the time to one hour, although a range from thirty-five to one hundred minutes is allowable, in his modification.

Ziegenbein[7] used the modification originated by Hans and Arthur Meyer of fastening male frogs to a board and exposing the heart before injection. The solution is injected into the thigh lymph-sac and in such a quantity as to produce systolic standstill in two hours.

Gottlieb[8] used as his unit "The smallest amount of the solution which will call forth systolic standstill of the heart of a 30 gm. frog in exactly thirty minutes."

Focke first published his modification of the frog-heart method in 1902.[9] This has been changed somewhat, but is essentially to determine the minimum dose causing systolic standstill in seven to fifteen minutes.

His method is more complicated than the others because of his taking into account the time period. The value of a sample is the result obtained by dividing

the frog weight by the product of the dose multiplied by the time. This makes the element of time a very important factor. Delayed absorption or exceptional resistance will lower the apparent value greatly.

While at this time, we are not considering suggested methods for standardizing the heart tonics of the digitalis series, other than by the use of frogs, it is not inappropriate to refer to the use of the warm-blooded animals. For example, Hatcher's Cat Method,[10] Reed and Vanderkleed's Guinea Pig Method,[11] Heinz' Mouse Method,[12] and the use of rabbits or dogs to determine the blood pressure and heart action, are all valuable. But for obtaining a fairly accurate estimation of the relative values of two preparations they do not appear to offer any material advantage over the frog-heart method first suggested and used for this purpose. Not only this, but cost, convenience and lack of general adaptability have prevented any extended application of them.

Edmunds & Hale [13] concluded that because in most cases the toxic action is not on the heart but on the respiratory centres "Methods which employ as a standard the minimum lethal dose obtained from the higher animals are not applicable to the physiological assay of the digitalis series."

The Frog-Heart Method may be considered to have three distinct modifications or that there are two modifications of the original twelve-hour method of Houghton, namely, the so-called Short-Time Method of Focke, and the One-Hour Method of Famulener & Lyons.

The Twelve-Hour Method of Houghton, is, distinctly, one allowing the total toxic effect of the drug to take place. The animal dies or recovers. A more or less total paralysis of the whole heart or of the ventricles may have taken place in many of the test animals, but unless this occurred and resulted in the death of a majority of five or more frogs following the injection of a certain quantity of the drug, a larger quantity must be chosen as the minimal dose. Delayed absorption, therefore, due to the nature of the drug will not vitiate the results: even digitalis has every opportunity to exert its characteristic effect.

During a large part of the year this takes place in three or four hours, or even less, in the case of Strophanthus, but during the winter months, and especially if the water in which they are kept is very cold the final result may be delayed considerably more than twelve hours.

If, however, we limit the time to one hour, or to ten minutes, and expect the drug to show its whole range of action, from therapeutic through to toxic, it is probably demanding the impossible of such a complex mixture as a fluidextract of digitalis. Absorption could not be complete in ten minutes and possibly not in one hour.

If the sample were a pure principle to be tested in comparison with a standard of like properties, the results should be comparable, otherwise the uncertainties of a physiological assay are considerably increased. Edmunds & Hale[13] conclude "that between these two methods (the twelve-hour and one-hour) it is largely a question of personal preference or convenience as far as can be judged in the light of our present knowledge."

Focke's Short-Time Method gives such inaccurate results, is so complicated, and is open to such extreme variations, that no results, by this method, are included.

The following series of tests has been carried out to compare more directly the advantages of two of the frog-heart methods of digitalis assay previously mentioned. The minimum dose of each preparation was determined according to both methods under as nearly similar conditions as possible. By personal observation as to the definiteness of the end-point, we were able to form an opinion regarding the value of each method as a means of determining the activity of preparations of the digitalis series:

TABLE No. I

FLUID EXTRACT DIGITALIS.

Description		M/L. D. 12-Hr. Method	Ratio, dose by 12-Hr. Meth. to 1-Hr. Method	Dose 1-Hr. Method
	1	.0010	(1.42)	.0007
	2	.0011	(1.37)	.0008
	3	.0017	(1.13)	.0015
	4	.0014	(1.55)	.0009
	5	.0016	(1.07)	.0015
	6	.0008	(1.14)	.0007
	7	.0008	(1)	.0008
	8	.0010	(1)	.0010
	9	.0008	(1)	.0008
	10	.0007	(1)	.0007
	11	.0009	(1.12)	.0008
	12	.0020	(1.81)	.0011
	13	.0013	(1.3)	.0010
	14	.0009	(1.29)	.0007
		Average	(1.22)	

TABLE No. II

TINCTURE DIGITALIS.

		M. L. D. per gm. 12-Hr. Method	Ratio of Doses	1-Hr. Method Dose
U. S. P.	1	.014	(1.27)	.011
B. P.	2	.009 (.010)+)	(1.5)	.006 (.007—)
		Figured to U. S. P. Strength		
B. P.	3	.010 (.011)+)	(1.43)	.007 (008.)
U. S. P.	4	.011	(1.27)	.008
U. S. P.	5	.016	(1.23)	.013
U. S. P.	6	.012	(1.5)	.008
U. S. P.	7	.009	(1.28)	.007
U. S. P.	8	.009	(1.5)	.006
U. S. P.	9	.008	(1.6)	.005
U. S. P.	10	.016	(1.33)	.012
U. S. P.	11	.014	(1.4)	.010
U. S. P.	12	.006	(1.2)	.005
		Average	(1.36)	

TABLE No. III.

POWDERED EXTRACT.

1	.00021	(1.09)	.00022
2	.00014	(1.4)	.00010
3	.00030	(1.2)	.00030
4	.00025	(1.25)	.00020
	Average	(1.20)	

SOLID EXTRACT. . .

1	.00014	(1.27)	.00011
2	.00018	(1.28)	.00014
3	.00036	(1.28)	.00028
4	.00036	(1.20)	.00030
5	.00022	(1.22)	.00018
	Average	(1.24)	

DIGITALONE AND DIGITALIN.

1	.028	(1.33)	.021
2	.013	(1.41)	.008
3	.00009	(1)	.00009
4	.00004	(1)	.00004

TABLE NO. IV.

STROPHANTHUS.

	M. L. D. 12-Hr. Meth.	Ratio of dose by 12-Hr. Meth. to 1-Hr. Method	1-Hr. Method
1	.00005	(.83)	.00006
2	.00004	(.80)	.00005
3	.00006	(.75)	.00008
4	.000045	(.32)	.00014
5	.00012	(.54)	.00022
6	.00011	(.64)	.00017
7	.00009	(.45)	.00020
8	.00007	(.43)	.00016
9	.00011	(.68)	.00016
10	.000075	(.53)	.00014
	Average	(.543)	

TABLE NO. V.

SQUILL.

1	.0006	(.75)	.00008
2	.0007	(.87)	.0008
	Average	(.81)	

TABLE NO. VI.

CONVALLARIA.

1	.00016	(1.23)	.00013
2	.00024	(1.09)	.00022
3	.00010	(.91)	.00011
	Average	(1.08)	

The fact which stands out most prominently from a superficial examination of this date is that the minimum dose of digitalis preparations is in most cases less by the one-hour method than it is by the twelve-hour method. The opposite is true in the case of Strophanthus preparations. This seems more logical since one would naturally expect it to require more of the active substance to cause systolic stoppage of the heart in one hour than to cause the death of the frog. Digitalis in sub-lethal doses must, therefore, produce an early paralysis of the heart from which the frog recovers. This fact in itself would seem to point to a possible cause for discrepancies in the one-hour method.

It is only with samples of Tincture Digitalis that we are able to obtain a clearly defined and uniform end-point by the one-hour method. In most of the tests of other members of the digitalis series the end-point is either difficult to determine because of inability to check the minimal dose or the heart does not stop in definite systole. It would seem that there should be some very nearly constant ratio between the minimum dose obtained by each method with the same preparation, but as stated above this has not been found true except approximately in the case of Tincture Digitalis.

Our observations would lead to the conclusion that the variability in the individual resistance of the frogs to digitalis plays a more important part in the one-hour method of assay than it does in the twelve-hour method and consequently adds to the indefiniteness and inaccuracy of results by the latter method. The

time element also has an important bearing on the comparative results by the two methods. Where the time which elapses between the injection of the active material and the observation of the result is relatively short the effect of the same dose of the same preparation (and by the same does we mean in proportion to weight) upon frogs of different resistance may be sufficient to produce conflicting results. On the other hand in a method involving longer period of observation where the death of the animal rather than a paralysis of the heart is the final end-point this difference of resistance does not play so important a part. It is true that even in the twelve-hour method the variation in the resistance of the test animals is an important factor, but it can be more easily and completely eliminated by this method than could be done in the case in the one-hour method, even if a similar procedure were applied, i. e., elimination of the factor of resistance variation by the use of a large number of test animals, and of a standard for comparison.

The point that we wish to emphasize, however, is that while variation in resistance can apparently be offset in both methods by the carrying along of a standard preparation of known strength, yet there seems to be varying degrees of paralysis of the heart; and that this paralysis has no uniform relationship to the death of the test animal. In the data on F. E. Digitalis in some cases, the minimum dose was the same by both methods, but the average lethal dose exceeded the one-hour dose by 22%, with a maximum variation of 81%. In the case of the Tincture Digitalis the variation ranges from 10% to 60%, the average excess required to kill the frogs over that necessary to cause systolic stand-still being 33%. Comparison of Strophanthus tinctures by the two methods shows that 54% of the one-hour dose will kill the frog, Squill 80%, Convallaria 108%.

From our observations we, therefore, summarize as follows: First, that the end-point in the one-hour method is more indefinite and consequently more difficult to determine than that of the twelve-hour method; second, that the variation in resistance of the test animal is a source of much greater error in the accuracy of the shorter method than it is in the other; third, that an absolute end-point such as death is more satisfactory than one which may show so many degrees of variability.

Our conclusion is that the death of the frog with heart in systole is a more accurate and dependable end-point in the reaction than a similar stoppage of the heart observed at any time previous to the absolute death of the animal.

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Contributed and Selected

THE ARMY HOSPITAL CORPS.

WM. B. DAY, PH. G.

Surgeon General Gorgas, in his annual report to the Secretary of War, recently published, earnestly urges an improvement in the conditions of the Army Hospital Corps. He again calls attention to the difficulty in securing desirable men for this important corps, and points out the fact that other branches of the service offer superior inducements. Dr. Gorgas refers to bills that have been introduced in Congress looking to the improvement of the efficiency of the Hospital Corps and which were drafted in accord with the recommendations of his office,—evidently meaning the Hughes-Bacon bills. But these "have not received the approval of the War Department." And this is the gist of the difficulty which our committee met with in urging the passage of these bills—their failure to secure the approval of the War Department,—which blocked our efforts completely. We were informed that the War Department had under consideration remedial legislation for the Hospital Corps. Secretary Garrison informed President Beringer that "should conditions in the Hospital Corps ever become so unsatisfactory, and such as to indicate that an improvement can be brought about only by an increase in pay of the members, the necessary increase will be recommended." Judging from the following paragraphs, quoted from the Surgeon-General's report, this time has arrived:—

"Attention has been repeatedly called to the deficiency in the number of Hospital Corps authorized for service, and recommendation made for an increase. On April 29, 1914, the Secretary of War authorized an addition of 1,500 men, making a total of 5,012 for the corps. May 9, 1914, authority was granted for the appointment of sixty additional sergeants. To date, 543 men in excess of the number previously allowed (3,512), have been re-enlisted in, enlisted for, or transferred from the line, to the Hospital Corps. The greater number of these men were used in the organization of new mobile units and field vacancies in the Second Division and with organizations on duty on the Mexican border.

"The class of men secured for the Hospital Corps, have by no means been satisfactory. During the excitement attending a possibility of active service in a campaign beyond the limits of the United States, a greater proportion of desirable men presented themselves for enlistment, and the commanding officer of one of the new organizations reported that he was receiving better men than had been serving with the detachment at his post. With passage of the incentive, the quality again deteriorated. A commanding officer of a post in commenting on his detachment expressed himself as follows: 'The sergeant is efficient and energetic, but the Hospital Corps men, with the exception of the sergeant, are

the riff-raff of the Army—and I am not putting it too strongly. In two or three cases they are not only woefully inefficient but are not clean personally. I have directed the surgeon to make a special report in the case and will give him any help he needs from our own troops. I really think that these men were transferred to rid some other command of worthless men, an almost criminal procedure when one considers how badly good Hospital Corps men are needed.'

"In each annual report of the Surgeon General for the past two or three years, attention has been invited to the inferior character of a considerable proportion of the men who are accepted for the Hospital Corps. And the reason for this has been pointed out, viz., the inferior inducements offered by the Hospital Corps in comparison with the opportunities offered by other branches of the service. Bills have been introduced in Congress for improvement in this respect along the lines recommended by this office, but these have not received the approval of the War Department. It is earnestly recommended either that this disapproval be reconsidered or else that other inducements be made by means of special ratings or in any other way whereby service in the Hospital Corps can be made sufficiently attractive to secure a desirable class of men."

The Surgeon General presents the bright as well as the dark side of the picture, as shown by the following instances of heroism displayed by members of what is sometimes termed a "non-combatant branch" of the Army:—

"Fortunately, however, all the men secured, even under the present unfavorable condition, are not undesirable men and a number of individual cases have occurred during the year where enlisted men of the Hospital Corps have rendered efficient and distinguished service. In October, 1913, a train carrying a band and two companies of Coast Artillery Corps, left the track and crashed through a wooden bridge near Buckatunna, Miss., and as a result, seventeen men were killed and nearly one hundred more or less seriously injured. Sergt. Halbert M. Beasley, Hospital Corps, although he was himself injured, worked unceasingly in rendering first aid and assisting in the removal of the wounded. For this he was awarded a certificate of merit. On March 25, 1914, Pvt. First Class Thomas Mosely, Hospital Corps, was awarded a certificate of merit for distinguished gallantry in action against hostile Moros while private, Hospital Corps, when he bandaged a wounded officer, in the face of a heavy fire from the Moro trenches, and carried him to a place of safety at the risk of his own life. This at Bagsak Mountain, Jolo, P. I., June 11, 1913."

"On April 21, 1914, Pvt. First Class Edward W. Morrison, Hospital Corps, was awarded a certificate of merit for meritorious conduct in rendering first aid to wounded comrades under fire of hostile Moros at Mamaya Peak, P. I., December 15, 1913."

As showing the need for medical knowledge and skill of no mean order and as an instance of the heavy responsibilities assumed by the military pharmacists is the following:—

"On March 6, 1914, a private of the Signal Corps detachment at Nulato, Alaska, presented evidence of an appendiceal abscess. No medical officer was present with this small detachment, but Sergt. First Class Richard A. Wood, Hospital Corps, diagnosed the case and communicated by telegraph with the surgeon at Fort Gibbon, about 250 miles distant. The surgeon started, but the distance had to be traveled by dog team and at least four days would be required for the trip. Two days later Sergt. Wood communicated with the surgeon by telegraph and stated the urgency of the symptoms and the condition of the patient. The condition of the soldier was so urgent as to demand immediate

operative interference and Sergt. Wood was authorized to proceed. On the same day the sergeant opened and drained the abscess under a local anesthesia. When the surgeon arrived the patient was in good condition. The surgeon reports that in his belief Sergt. Wood, by performing a prompt drainage of the abscess, greatly facilitated the patient's recovery and probably saved his life."

The authorized strength of the Hospital Corps is as follows:—

Sergeants, first class	300
Sergeants	422
Corporals	50
Privates, first class, and privates	4,240
Total	5,012

There were in the service June 30, 1914:—

Sergeants, first class	300
Sergeants	399
Corporals	41
Acting Cooks	180
Privates, first class, and privates	3,135
Total	4,055

The new committee on Status of Pharmacists in the Government Service, to be appointed by President Mayo, should lose no time in getting in touch with the War Department with a view to learning at the outset whether the Department will approve of a bill drafted along the lines of the Hughes-Bacon Bill—and if such approval is withheld then a strong effort should be put forth to discover what the objections of the Department really are and how they may be overcome. It is futile to enter upon another campaign at the coming session of Congress until these facts are determined.

A SYMPOSIUM ON THE PHARMACEUTICAL SYLLABUS.

(Continued from last month.)

BOSTON, MASS.

The Pharmaceutical Syllabus was first considered at a meeting held at Niagara Falls in June, 1906, and plans for its preparation were worked out by a Committee consisting of Willis G. Gregory of Buffalo, Henry H. Rusby of New York City, and Henry L. Taylor of Albany. This Committee soon decided to give the proposed publication a national character, by inviting the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties each to appoint representatives on the Committee. This invitation was formally accepted by each of the organizations in September, 1906, and the membership was thus increased to five members, who soon afterward appointed sixteen other members from boards of pharmacy and faculties of colleges of pharmacy. The number of members has been twenty-one since 1906, with but few temporary vacancies. In 1910, after the issue of the first edition, the American Pharmaceutical Association adopted a by-law providing for representation on the Committee and the method of appointment of members was changed so that each of the three organizations represented appoint seven of the twenty-one members on the Committee. Since its organization, the Committee has included representatives from many of the leading colleges of pharmacy in the United States and from many of the state boards of pharmacy.

The expenses of the Committee have been paid from annual appropriations of twenty-five dollars from each of the three parent organizations and from the receipts from the sale of the second edition. No member of the Committee has been paid anything for his work, which has been very considerable in several cases.

The need of an outline of the standard course in pharmacy is generally conceded and it was strikingly shown, when the Committee began an inquiry into the courses given by colleges of pharmacy throughout the country, by the differences in subject-matter, length of courses and methods of teaching that were reported. Members of the Committee had great

differences of opinion on what constituted a proper course in pharmacy and many stormy times have resulted from these and other causes.

Dr. Henry L. Taylor, of Albany, N. Y., an official of the New York State Education Department, was secretary-treasurer of the Committee from 1906-1914, and has done more than any other one man for the Syllabus. Dr. Taylor is an educator and not a pharmacist, and his point of view was often very different from that of other members of the Committee. He is a man of tireless energy with the courage of his convictions and he was often at odds with various members. We believe that in the future the great amount of unselfish work done by Dr. Taylor will be appreciated at its true worth. On the issuance of the second edition, Dr. Taylor withdrew from the office of secretary-treasurer, in accordance with notice previously given, and the writer was elected to the office.

The recent agitation against the Syllabus came almost entirely from certain members of the Committee, apparently because they could not induce the Committee to adopt some of their ideas and they were unwilling to accept a compromise. We believe that these gentlemen are sincere in their efforts, but we could not agree to all of their propositions and thus we antagonize them.

No member of the Committee believes that the Syllabus is near to perfection. The first edition was very imperfect in many parts. In the second edition these faults are largely corrected, or replaced by new matter, and this edition is a great improvement over the first. This is the only way in which such a book can be prepared and if succeeding editions each show improvement over the immediately preceding one we shall ultimately have as nearly perfect a work as can be obtained. With this in view, the Committee is planning for revision every five years. The proposal, which has been made and rejected, that all of the good in the present syllabus be thrown away and a new one prepared, was not a good one. What we need is constructive, not destructive criticism.

THEODORE J. BRADLEY.

NEW ORLEANS, LA.

The object of the Syllabus, is uniformity in teaching the various branches of pharmacy and as a guide to both the teachers of schools of pharmacy and the examiners of boards of pharmacy. It must be admitted that graduates of pharmacy are examined by other boards than the one of the school, it is rather the exception than the rule.

If there is no unanimity of action between colleges and boards of pharmacy of the same state, the object of the syllabus is defeated.

Personally, the Syllabus appeals strongly to me and while there is, as has been too often admitted, gross errors in the old issue, it can be made to serve a most excellent purpose in the pharmaceutical education of this country, but, not only is its adoption by every college and board of pharmacy necessary, to carry out the objects of those credited with its introduction, but the boards and colleges of the same state must work along the same lines.

The fact that this work is the result of the combined efforts of members composing every avenue of pharmaceutical endeavor, is in itself an indication of the kind of pharmaceutical thought that it reflects. Composed of committee of seven each, from the American Pharmaceutical Association, the National Associations of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties, it does not seem possible that such a Committee could have issued something wholly at variance with the pharmaceutical educational needs of this country.

The work of the Syllabus Committee proper could be materially strengthened by the appointment of sub-committees of five members each, from the same associations from which the Syllabus Committee was derived, to correct and eliminate any of the short-comings in the publication that may exist. This would not be any additional expense to the Syllabus Committee, as these members could be selected from the membership of the three bodies who regularly attend the annual meeting of the American Pharmaceutical Association.

PHILIP ASHER, M. D., DEAN.

BALTIMORE, MARYLAND.

Sir:—I am somewhat embarrassed by your request for an expression of my views upon the second issue of the Pharmaceutical Syllabus, since I feel incompetent to discuss a subject which has had such long and careful study and such close attention from an unusually able committee; on no account, would I discuss any part of the Syllabus, excepting that which refers to the branches which I am trying to teach.

Much pleasure and encouragement have followed an examination of the last edition; the changes made bring it more nearly in accord with my ideas regarding the teaching of dispensing and commercial pharmacy. I have, lately, gone over the outline given for these branches and am pleased to note that, during the last twelve years, our efforts have been in close accord with the suggestions of the Syllabus committee. As an instance of the help I derive, I will state, that, for several years I have been wondering if I should continue to instruct students how to spread plasters. I find that the Syllabus recommends that such instruction be given, consequently, I am justified in continuing the practice.

The separation of pharmaceutical jurisprudence from the commercial course is, in my

opinion, entirely proper, and another instance of progress, as this was not so in the former edition of the Syllabus.

In regard to the time devoted to the different branches, I notice that seventy-five hours is suggested for commercial pharmacy. We have given but forty-eight hours to this branch and have found it quite enough to equip the better students for the commercial part of pharmacy. If I could be decided in any criticism of the dispensing course, I would say that the time allotted to this important work is entirely too little. We find that a hundred and ninety-two hours in the two years is none too much to give students the knowledge and practice necessary to equip them for prescription work.

On the whole, I am one of those "simple-minded fellows" who believe that the Syllabus Committee has done wonderfully well with a most difficult problem, and if the members of the Committee continue their good and helpful work, the Syllabus will soon be of great assistance to pharmaceutical schools and teachers and a credit to all concerned.

HENRY P. HYNSON.

BROOKLYN, N. Y.

With much interest did the writer follow the discussions on the Pharmaceutical Syllabus at the A. Ph. A. Convention at Detroit, and also the minutes as published in the November number of the Journal.

The chief object of the Pharmaceutical Syllabus is to indicate the general scope and character of the instruction to be given by the teacher, and to outline the work to be done by the pharmaceutical student. It is an everlasting credit to the A. Ph. A. to have originated this splendid idea, which has resulted in a work which represents not only the A. Ph. A., but also the American Conference of Pharmaceutical Faculties, as well as the National Association of Boards of Pharmacy.

The National Syllabus Committee, thus formed, has so far published two editions of the National Syllabus. As was to be expected, the first edition of this book did *not* prove very satisfactory. However, pharmacists at large and quite especially the pharmaceutical educators in the United States had reason to expect that the second edition of the Pharmaceutical Syllabus would be a decided improvement. But to the great surprise of all of those looking for an *improved* edition, a sad disappointment resulted.

The writer has always taken an active interest in pharmaceutical education, and still more so since his appointment as Professor of Pharmacy, Pharmaceutical Chemistry, and History of Pharmacy in the Department of Pharmacy in the College of Jersey City. That the second edition of the Pharmaceutical Syllabus did *not* prove satisfactory to the Faculty of our College, can be seen from the following comments which have been published in our catalogue for the Session 1914 to 1915.

OUR ATTITUDE TOWARD THE PHARMACEUTICAL SYLLABUS.

The aim of the Pharmaceutical Syllabus is to outline a minimum course of study which would be broad enough and sufficiently well balanced to be acceptable as a basis of instruction to our schools of pharmacy and at the same time would be sufficiently extensive to be of use to our boards of pharmacy, to examine candidates for state conferred rights and privileges.

The Second Edition has been compiled by the National Committee of the Pharmaceutical Syllabus and published in June, 1914. Our College immediately appropriated a copy for each department. After careful consideration our faculty found itself heartily in sympathy with the objects of the Pharmaceutical Syllabus and considers the present, Second Edition a material improvement on its predecessor. However, our College is unable to *adopt* the Pharmaceutical Syllabus in its present status, in its entirety and for the following reasons:—

1.—Because no lectures are provided on the Theory of Pharmacy for the Senior year, which in our experience is a serious deficiency.

2.—Because the Syllabus for the subject of pharmacy provides during the Junior year only a total of 195 hours and for the Senior 205 hours. This time is entirely inadequate for a thorough course in this important branch of the work in order to provide the student with sufficient knowledge to take charge of a pharmacy in which drugs are dispensed and prescriptions compounded and also to pass the state board examination in a competent manner.

3.—Because as many as seventy-five hours are provided for Commercial Pharmacy and only sixty for Dispensing Pharmacy during the Senior term. This allotment of time is in the opinion of the Faculty unjust, as it lays too much stress upon commercialism and too little upon the professional side.

Nevertheless, in the arrangement of our courses, the Syllabus has been followed as much as possible and as far as in the opinion of our Faculty it was justified by experience and in accordance with our principles.

To the above comments, the writer may add the following personal ones:—

1.—In carefully looking over the second edition of the Pharmaceutical Syllabus, I find that only thirty-five pages are devoted to Pharmacy, while on the other hand, Materia Medica

occupies fully fifty-six pages. Let me ask the pharmaceutical educators and pharmacists in general if this is *fair* to the student at a school of pharmacy?

2.—Physiology occupies eleven pages and Dispensing Pharmacy only three pages! Just think of it!

3.—Posology, a Junior Study of but fifteen hours, occupies thirteen pages! Evidently, the gentleman who prepared this *outline* most certainly did *stretch* same!

4.—Last, but not least, Chapter VI, Reference Works, and Chapter VII, Text-books and Pharmaceutical Periodicals, both of which chapters occupy such a prominent place in the second edition of the Pharmaceutical Syllabus, are so full of mistakes, grammatical and otherwise, that they are certainly a disgrace to American Pharmacy. This latter fact has been so fully commented upon at the Detroit Convention, that it is unnecessary for the writer to dwell upon it any longer.

CONCLUSION.

In conclusion, I beg to state that the aim of the Pharmaceutical Syllabus is most certainly a laudable one. Let us hope that the third edition will be a great improvement upon its predecessors, and that it will prove satisfactory to our schools of pharmacy, and also to our boards of pharmacy. Up to the present time, there has been quite some confusion between the fact that the Pharmaceutical Syllabus is *sometimes adopted*, but *most generally only approved!*

Let us hope that the next edition of the Pharmaceutical Syllabus will be a master-work, which will be *adopted* by *all* the colleges of pharmacy and *all* the boards of pharmacy!

OTTO RAUBENHEIMER.

DERIVATIVES OF SALICYLIC ACID.

JOHN W. FORBING, PH. C., B. S.

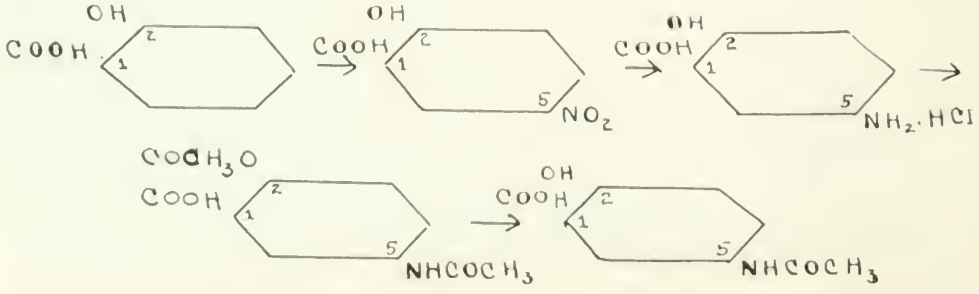
ACETYLAMINO-SALICYLIC ACID AND ACETYLAMINOACETYL-SALICYLIC ACID FROM SALICYLIC ACID.



The following paper presents detailed methods for the production of the various acids which compose the steps of the synthesis. Interest is attached specially to acetylamino-salicylic acid $C_6 H_3 (NHCOCH_3) OHCOOH$, in that its structural formula bears a resemblance to what might be termed, a composite of the active radicles of Phenacetin, $C_6 H_4 O. C_2 H_5. NHCOCH_3$, and Aspirin $C_6 H_4 COOH.OCOCH_3$.

Acetylamino-salicylic acid forms soluble salts with, NH_4, K, Na, Ca, and Sr. If tests indicate clinical usefulness, the product would have a decided advantage over the various insoluble varieties of Analgesics and Antipyretics.

The process of synthesis is based on the nitration of salicylic acid, the production and isolation of assymetric metanitro-salicylic acid (1-2-5) with liberal yield; the conversion of the nitro-salicylic into amino-salicylic acid hydrochloride and subsequent acetylation of the Amino and hydroxyl groups:—



Pharmacological, bactericidal and clinical factors are at present being determined by the Creighton College of Medicine and will be reported in the near future.

Assymetric metanitro-salicylic acid (1-2-5) is obtained by the following process:— 160 gm. potassium nitrate is placed in a 2000 cc. flask with 200 gm. sodium salicylate, and a solution of the salts is made with 600 cc. of water; 250 cc. of concentrated sulphuric acid is gradually and cautiously added, controlling the re-action by the affusion of cold water. After complete addition of sulphuric acid, the contents of the flask are poured into a spacious, porcelain evaporating-dish and 20 cc. of fuming nitric acid added, and the mixture allowed to stand for two hours. It is then heated on the water-bath for about one hour, in order to complete re-action, and allowed to stand in a cool place for twelve hours. The crystalline mass which separates out, is removed by means of a Buechner funnel and vacuum pump, and pressed free from mother-liquor. The mass is then dissolved, by boiling it in a solution of 130 gm. of sodium hydroxide in 750 cc. of water. The resultant dark-red solution is allowed to cool. There separates a reddish-brown mass composed principally of di-sodium-metanitro-salicylate, $C_6 H_3 (NO_2) O Na COO Na.5H_2O$. The mass is placed in a funnel, exhausted by vacuum and pressed. (The filtrate may be reserved, and vicinal nitro-salicylic acid, with a m. p. 118°, may be obtained by acidifying with HCl, boiling with purified animal charcoal, filtering hot, removing the cream-yellow crystalline mass which separates out on cooling, and purifying by conversion, into the K-salt. The K-salt is very soluble in boiling aqueous solution and, on cooling, crystallizes out in long, yellow, silky needles.)

The di-sodium-metanitro-salicylate mass is purified by solution in 500 cc. of boiling water, removal from source of heat and adding 200 cc. of methyl alcohol. On cooling, a bright uniformly-colored orange-red mass, crystallizes out, which is practically pure di-sodium-metanitro-salicylate.

Analysis of the mass washed with methyl alcohol, dried in air:—

Calculated for $C_6H_3(NO_2)ONaCOONa.5H_2O$.

0.5597 gm. substance—0.1589 gm. H_2O calculated—0.1508 gm. found.

0.2021 gm. substance—0.0677 gm. Na_2CO_3 calculated—0.0708 gm. found.

The mass of di-sodium-nitro-salicylate yields the acid by placing it in 500 cc. of water, acidifying with HCl with an excess of about 150 cc., boiling and filtering while still hot. The acid is practically insoluble, in boiling water containing HCl, and remains on the filter as a yellow mass. This mass is washed with water and pressed, dissolved in boiling alcohol to which is added purified animal charcoal and filtered hot. The filtrate may be evaporated on a water-bath with a yield of 72 gm. of assymetric metanitro-salicylic acid in yellow prism crystals. Melting point, 228° with charring, (agreeing with data given in Richter's Organic Chemistry, Smith, vol. 11, p. 225).

Analysis for Nitrogen:—Kjeldahl-Gunning Method:—

Calculated—N, 7.66%; found—N, 7.40%.

DUMAS' METHOD, *Technic*, Weyl (*"Die Methoden der organischen Chemie, Allgemeiner Teil, s.* 34").

Calculated—N, 7.66%; found—N, 8.16%.

With potassium bicarbonate, the acid yields a salt crystallizing from hot aqueous solution in saffron-yellow needles; this salt dried two weeks *in vacuo* over H_2SO_4 gave the following, potassium as K_2SO_4:—

0.45.. g. Salt; K_2SO_4; Calculated—0.1802. Found—0.1784.

The nitro-salicylic acid obtained by the above process is converted into amino-salicylic acid by reduction with tin and HCl.

50 gm. nitro-salicylic acid crystals is placed in a flask with 250 cc. of alcohol, 100 gm. tin and 200 cc. HCl added. The acid is added in portions of 50 cc. and the heat of reaction controlled by affusion of cold water. After addition of acid, an hour, is allowed for complete reaction:—

$$C_6H_3(NO_2)OHCOOH+3\ Sn+6\ HCl=$$
$$C_6H_3(NH_2)OHCOOH+2\ H_2O+3\ SnCl_2.$$

The contents of the flask are then heated until the white precipitate which is formed, is re-dissolved, and filtered hot. The alcoholic filtrate is evaporated, on the water-bath, to about two-thirds of its volume and allowed to stand for twelve hours. At the end of this time a large proportion of the double salt of the hydrochloride of the amino-acid and $SnCl_2$ crystallizes out. The crystalline precipitate is separated and placed in 300 cc. of water and the tin separated with H_2S, filtered, and the filtrate evaporated on the water-bath. The amino-salicylic acid hydrochloride, $C_6H_3NH_2OHCOOH.HCl$, crystallizes out in shining grayish-white crystals. By this process a portion of the amino-salicylic acid hydrochloride, remains in the filtrate and may be obtained by additional precipitation of tin with H_2S as SnS and SnS_2. The solution is filtered cold, to avoid re-solution of SnS_2, and the residue of sulphides containing a portion of the sparingly soluble amino-salicylic hydrochlorides, may be heated with water and filtered hot, the filtrate giving an increased yield of the hydrochloride.

Acetyaminoacetyl-salicylic acid is prepared as follows: 20 gm. amino-salicylic acid hydrochloride, is placed in a 100 cc. round-bottom flask and an excess of acetic anhydride added. The flask is connected with an upright condenser and heated on an oil-bath to 140–145° for one hour. The following re-action takes place:

$$C_6H_3(NH_2)OHCOOH.HCl+(CH_3CO)_2O=$$
$$C_6H_3NHCOCH_3.O.COCH_3COOH+HCl+H_2O.$$

HCl is liberated and acetylation takes place with the gradual formation of a clear solution. The product of the re-action is poured into 150 cc. of water, and the greater amount of the acetic acid formed, due to excess of the anhydride used, is driven off by boiling and the water replaced. On cooling, clusters of white crystals of acetylaminoacetyl-salicylic acid separate and are collected on filter and washed with cold water.

These crystals were purified for analysis by re-crystallization from alcohol.

Calculated for $C_6H_3NHCOCH_3O.COCH_3COOH$—N, 5.97%.

Found, 5.94, 6.07%.

This acid (acetylaminoacetyl-salicylic) has a melting point of 181°.

I found it impossible to produce a potassium salt of this acid. This acid gives no hydroxyl re-action with ferric chloride. On combining molecular weights of the acid and $KHCO_3$ the hydroxyl is opened and acetic acid liberated and the K-salt of acetylamino-salicylic acid is formed. If this re-action takes place in the presence of ethyl alcohol, ethyl acetate is formed. The following equations account for action taking place:

$$C_6H_3(CH_3CONH)O.COCH_3.COOH+KHCO_3=C_6H_3(CH_3CONH).OHCOOK+CH_3COOH+CO_2.$$

$$C_6H_3(CH_3CONH)O.COCH_3COOH+KHCO_3+C_2H_5OH=C_6H_3(CH_3CONH)OHCOOK+COCH_3.O.C_2H_5+CO_2+H_2O.$$

Both acetylamino-salicylic acid and its potassium salt give a rich blue-coloration with ferric chloride.

If acetylaminoacetyl-salicylic acid is neutralized with potassium carbonate the K-salt of acetylamino-salicylic acid separates from a hot aqueous solution as a fine white powder. The K-salt, free from H_2O, gave the following results on analysis, determining potassium as K_2SO_4 and assuming the formula to be $C_6H_3(NHCH_3CO)OH.COOK$:—

0.5621 gm. K-salt; K_2SO_4; found—0.2163. Calculated—0.2098.
0.0143 gm. K-salt; K_2SO_4; found—0.0407. Calculated—0.0427.

If sodium acetate be added to acetylaminoacetyl-salicylic acid as a condensing agent, in order to introduce, by means of acetic anhydride, an acetyl radicle in the carboxyl group, there results a compound, crystallizing from water acidulated with HCl in silver-lustred laminæ. This compound is undoubtedly the acetester of acetylaminoacetyl-salicylic acid; m. p. 245°. It is unstable and shortly after preparation gives acid re-action with potassium carbonate and a wine-coloration with ferric chloride. It crystallizes from alcohol in colorless prisms.

Creighton University Laboratories, Omaha, Neb.

TRANSATLANTIC TELEPHONY.

Mr. Marconi announces that an attempt to talk by wireless telephone from Carnarvon, Wales, to New York probably will be made within the next three months. Godfrey Isaacs, manager of the Marconi Company, testifying before the Dominion's Royal Commission on Imperial Communications, had said this feat probably would be accomplished before the end of the year, and he added: "I do not hesitate to express the opinion that if Marconi is able to telephone to New York he will, when the stations for wireless communication between this country and Buenos Aires are built, telephone to that city at the same time that he telegraphs."

Sir Rider Haggard, who is a member of the commission, anxious to follow up this peep into the future, asked Mr. Isaacs:

"You expect the time when a subscriber can have a telephone in his house by which he can telephone all over the world?"

Mr. Isaacs answered that he would not like to go so far as that. Many difficulties first would have to be overcome. It might be possible to go to a particular station in London and telephone to New York. There were great things yet to be revealed in the wireless business."—*Boston Transcript.*

Of General Interest

NATIONAL DRUG TRADES CONFERENCE.

PROCEEDINGS OF ANNUAL MEETING HELD AT THE NEW WILLARD HOTEL, WASHINGTON, D. C., DECEMBER 10, 1914.

President Wallace called the meeting to order at 10:30 a. m.

The Secretary called the roll of delegates duly accredited from their respective organizations.

American Pharmaceutical Association:
John C. Wallace, New Castle, Pa.
Samuel L. Hilton, Washington, D. C.
J. H. Beal, Urbana, Ill.

National Wholesale Druggists' Association:
Charles A. West, Boston, Mass. (absent).
C. Mahlon Kline, Philadelphia, Pa.
George W. Lattimer, Columbus, Ohio, represented by F. E. Holliday.

National Association of Retail Druggists:
Samuel C. Henry, Philadelphia, Pa.
J. H. Rehfuss, Brooklyn, N. Y.
J. F. Finneran, Boston, Mass. (absent).

American Association of Pharmaceutical Chemists:
Willard P. Stearns, Chicago, Ill., represented by George C. Hall, Brooklyn, N. Y.
Dr. W. C. Abbott, Chicago, Ill., represented by Dr. Alfred S. Burdick, Chicago, Ill.
R. C. Stofer, Norwich, N. Y.

National Association of Manufacturers of Medicinal Products:
Adolph G. Rosengarten, Philadelphia, Pa.
Dr. A. R. L. Dohme, Baltimore, Md.
Charles M. Woodruff, Detroit, Mich.

The minutes of the last meeting of the Conference were approved as printed.

The privilege of the floor was extended to Dr. W. C. Woodward, of Washington, D. C., representing the American Medical Association; Dr. M. I. Wilbert representing the Public Health Service, and Mr. J. Fred Windolph, of the Norwich Pharmacal Company.

The following report of the proceedings of the Executive Committee was read.

REPORT OF THE EXECUTIVE COMMITTEE.

A Meeting of the Executive Committee of the National Drug Trade Conference was held at the New Willard Hotel, Washington, D. C., December 9, 1914 in pursuance of a call of the President.

Meeting called to order by Chairman John C. Wallace at 11:45 a. m.

Present: John C. Wallace, Chairman; Charles M. Woodruff, Secretary; Samuel C. Henry, alternate for James F. Finneran; C. Mahlon Kline, and R. C Stofer.

The minutes of the last meeting were read and approved.

Mr. Samuel C. Henry then presented his credentials as alternate for Mr. Finneran, and they were duly accepted.

Mr. Kline moved that a committee of three be appointed by the Chairman to draft a resolution respecting the matter of a regulation admitting medicinal poisons to the mails and report same to the afternoon session.

Motion seconded, put to vote and carried.

The Chairman appointed Messrs. Kline, Henry and Woodruff as such committee.

The following communication from the Council of the American Pharmaceutical Association was then read:

"At a meeting of the Council of the American Pharmaceutical Association held August 29, 1914, the following resolution passed by the House of Delegates and referred to the Council was approved:

"'That the American Pharmaceutical Association instruct its representatives in the National Drug Trade Conference to act immediately in connection with the representatives of the large branches of the drug trade in the Drug Conference to draft at the earliest possible moment a bill to reform the present patent rights, registration of the names of drugs and the granting of sole right to sell certain drugs to the people of the United States, suitable to the best interests of the Drug Trade in the United States, and to urge its passage at the earliest possible opportunity, and the support of the A. Ph. A. is hereby pledged to such reform.'

"The action of the Council was approved by the Association at the following general session."

Mr. Kline moved that the communication be referred to the Conference with the recommendation that the Conference appoint a special committee to consider the matter, and report at the next called meeting of the Conference.

Motion carried.

Secretary-Treasurer Woodruff then read the following financial statement:

Receipts.

Balance on hand Jan. 9, 1914	$135.55	
Sept. 4, 1914, by amount charged National Association envelopes	2.34	
		$137.89

Expenditures.

Jan. 13. Stenographer at New Willard	.50	
Feb. 2. Postage, 100 2's	2.00	
Feb. 18. Postage, 100 1's	1.00	
Feb. 28. Parke, Davis & Co., for mailing packages	.55	
March 2. 200 Reprints, January meeting	6.50	
March 5. Postage, 100 1's	1.00	
March 30. Parke, Davis & Co. for mailing brief on Harrison Bill to members of Congress	4.28	
April 8. 1000 printed briefs on Harrison Bill	20.00	
April 24. Postage, 100 2's	2.00	
Aug. 17. Postage, 50 2's	1.00	
Sept. 4. Parke, Davis & Co.'s bill of March 5th for printing stationery	9.24	
Sept. 4. Parke, Davis & Co.'s bill of April 9, 1914, for printing resolutions of the Conference	13.76	
Sept. 10. Telegram sent Aug. 26th to J. Hampton Moore, Washington, D. C	.96	
Sept. 15. Postage, 50 2's	1.00	
Oct. 8. Postage, 25 2's	.50	
Nov. 7. Mr. Brokmeyer for telegrams sent, to Aug. 28th inclusive	28.29	
Dec. 3. Telegram sent to Senator Townsend and Congressman Doremus respecting the Stamp Tax Bill	4.58	
		97.16
Balance on hand December 4, 1914		$40.73

A communication from the Philadelphia Drug Exchange was received, and referred to the Conference.

The Committee then adjourned to meet in the Gridiron Room at 4 p. m.

The Executive Committee met pursuant to adjournment at the Gridiron Room, December 9, 1914, 4 p. m.

Present: The entire committee.

The minutes of the forenoon meeting were read and approved.

The special committee appointed to frame a resolution on a medicinal poison regulation then offered the following:

Resolved, That the National Drug Trade Conference hereby renews the representations and recommendations it has made in the past respecting the mailing of medicines containing poisons not outwardly or of their own force dangerous, and urges upon the Postmaster General the necessity of immediately promulgating a regulation in accordance with the letter and spirit of Section 217 of the United States Criminal Code, that will permit of the economical and prompt distribution of some of the most valuable medicinal agents which are now denied the mails, and for the lack of which in the hands of the medical profession and drug trade, particularly in small places, inaccessible to express offices, human health and even life is often imperilled.

Resolved, That the Secretary be and he is hereby instructed to send a copy of this Resolution to the Postmaster General.

C. MAHLON KLINE,
S. C. HENRY,
CHARLES M. WOODRUFF.

Prof. Beal moved that the resolutions be approved by the Committee and referred to the Conference with the recommendation that they be adopted.

Motion carried.

The probability of the Revision Committee of the United States Pharmacopœia adopting the cylinder-shaped, separately-wrapped bichloride of mercury pastille of the German Pharmacopœia was discussed by Dr. Dohme, Prof. Beal, Mr. Kline and others.

Mr. Kline moved that a special committee of three be appointed to frame a protest against the plan and present same to the Conference at its meeting.

Motion carried.

The Chairman appointed Mr. Kline, Dr. Dohme, and Prof. Beal as such committee.

Chairman Wallace asked if there was any objection on the part of any member to his inviting a representative of the Public Health Service, and a representative of the American Medical Association to meet with the Conference to-morrow. No member of the Committee objected.

Prof. Beal moved that the Executive Committee recommend that the Conference invite the Proprietary Association of America to send three delegates to the Conference in accordance with Section (2) of the Code of Rules and Regulations of the Conference.

Motion carried.

Prof. Beal moved that Mr. Henry, Mr. Stofer, and Mr. Woodruff be appointed a special committee to confer with Mr. Talbot, of the Internal Revenue Department, respecting forms of order blanks under the Harrison Bill.

Motion carried.

After some remarks of general interest, the meeting then adjourned to meet again at the call of the Chairman.

Report received and ordered printed in the proceedings of the Conference.

Dr. A. R. Dohme moved the adoption of the following resolution:

Resolved, That this Conference go on record as favoring a revision of the United States Patent and Trademark Laws, and that in accordance with the recommendation of the Executive Committee a committee of five be appointed to carefully consider the entire question after conferring with other National organizations that are similarly considering the same and report back their findings to a subsequent meeting of this Conference.

Motion carried.

The President appointed as such committee: Dr. A. R. L. Dohme, Mr. J. H. Rehfuss, Mr. George W. Lattimer, Prof. James H. Beal, and Mr. R. C. Stofer.

The financial report of the Secretary, as contained in the report of the Executive Committee, was read and approved.

Mr. Henry moved that the resolution recommended by the Executive Committee respecting a regulation admitting medicinal poisons to the mails be adopted.

Motion carried.

The special committee appointed by the Executive Committee to present a resolution to the Conference respecting the probable adoption by the Revision Committee of the United States Pharmacopœia of the mercury bichloride pastille of the German Pharmacopœia then offered the following:

WHEREAS, We are informed that the Revision Committee are considering favorably for adoption in the next edition of the U. S. Pharmacopœia the German standard for Bichloride Tablets, and

WHEREAS, We believe that the German standard which is a cylindrical tablet colored pink and wrapped individually in paper would be dangerous to the public health inasmuch as candies are often of similar shape and are so wrapped, and also that the wrapping of the tablets would be detrimental to the health of the employe engaged in the work.

THEREFORE, Be it resolved that the National Drug Trade Conference go on record as opposed to this standard for bichloride tablets and that a copy of this resolution be sent to each member of the Revision Committee.

C. MAHLON KLINE, Chairman.
J. H. BEAL,
A. R. L. DOHME.

Dr. Burdick moved the adoption of the resolution.

Motion carried.

Prof. James H. Beal then moved that the recommendation of the Executive Committee that the Proprietary Association of America be invited to send three delegates to the Conference in accordance with Section (2) of the Code of Rules and Regulations be approved and that the Secretary be instructed to send such invitation.

Motion seconded and unanimously carried.

Mr. Rosengarten moved that the Secretary be instructed to invite the American Medical Association to send three delegates to the Conference in accordance with Section (2) of the Code of Rules and Regulations.

Motion carried.

The communication received from the Philadelphia Drug Exchange and referred to the Conference by the Executive Committee was then taken up, and discussed, and Mr. Kline moved that a committee of three be appointed to draft a suitable resolution and present same to the Conference at its afternoon session.

Motion carried.

The President then appointed the following nominating committee: Mr. Rehfuss, Prof. Beal, Mr. Rosengarten, Mr. Holliday and Dr. Burdick.

Mr. Henry inquired if any member could authoritatively inform him whether a druggist who sold some items on a commission basis could be taxed as a commission merchant. The Secretary expressed the opinion that he could not, and Mr Brockmeyer, who was present, read an analogous ruling confirming the Secretary's opinion.

Mr. Rehfuss moved that a special committee be appointed to file a protest with the Treasury Department against the double, and possible treble and quadruple taxation resulting from compelling the retail druggist to stamp packages he puts up from bulk packages already stamped and placed on his shelves.

Motion carried.

The President appointed Mr. Holliday, Mr. Rehfuss and Mr. Henry as such committee.

The Conference then adjourned to meet at four o'clock in the afternoon of the same day.

AFTERNOON SESSION OF THE CONFERENCE.

The Conference was called to order by the President, a quorum being present.

The Committee appointed to report to the Conference upon the communication received from the Philadelphia Drug Exchange then offered the following:

The committee to which has been referred the communication of the Philadelphia Drug Exchange respecting a proposed amendment of the section of the Federal Food and Drugs Act, governing the admission through the port of entry of drugs, the quality of which is under dispute or concerning the admissibility of which under the law there is a difference of opinion, respectfully report as follows:

1. The Committee is of the opinion that the evidence submitted indicates that, under existing practice, marked differences exist in the rulings at the different ports, whereby drugs which are refused at one port may be admitted at another.

2. That decisions regulating the admission of drugs are not enforced at all times at the same port of entry.

3. That the failure of the law to provide a method for review of the decision of the Secretary of Agriculture of the admissibility of a drug or chemical substance makes possible the existence of inequalities and lack of uniformity in drug importation, and may occasion instances of marked injustice to drug importers.

4. That the committee is not prepared at the present time to recommend a definite form of amendment for the correction of the faults referred to it, but does recommend that the whole subject be referred to a select committee of three, which committee should be instructed to co-operate with representatives of the Philadelphia Drug Exchange and of the Drug Trade Section of the New York Board of Trade and Transportation in an effort to obtain an amendment to that portion of the Food and Drugs Act which governs the admission to the United States of drugs submitted for entry as will bring a substantial correction of the faults complained of.

J. H. BEAL,
A. G. ROSENGARTEN,
C. MAHLON KLINE, Chairman.

On motion, the report was adopted and the committee was continued to act as the select committee referred to in the report. Dr. Beal declined to serve, and Mr. A. R. L. Dohme was appointed in his stead.

The committee appointed by the Executive Committee to interview the Commissioner of Internal Revenue respecting regulations, order forms, etc., under the Harrison Bill reported, verbally, that the Committee had been graciously received by Commissioner Osborne and referred to Mr. Talbot of the Law Division of the Internal Revenue office; that they had seen Mr. Talbot who expressed himself very anxious for the assistance and coöperation of the Committee; that the result of the interview was that Secretary Woodruff was to secure order blanks now used by the various manufacturers and wholesalers and submit same to Mr. Talbot that he might be guided thereby in determining the requirements of the trade also that Secretary Woodruff submit suggestions respecting the Record Book to be used under the Act.

On motion the report was accepted and approved and the committee continued to complete its work.

Mr. Stofer moved that each constituent association be assessed $50.00 to replenish the funds of the Conference.

Motion carried.

Mr. Henry moved that the Conference approve the Stevens Bill to secure price protection, being H. R. No. 13305.

Motion carried.

Dr. Dohme moved that the Secretary be instructed to cable Governor General, Francis Burton Harrison of the Philippine Islands, congratulations on the passage of the Harrison Bill.

Motion carried.

The Committee then reported the following nominations:

President, Mr. John C. Wallace.
First Vice-President, Mr. Charles A. West.
Second Vice-President, Dr. Wallace C. Abbott.
Third Vice-President, Mr. James F. Finneran.
Secretary-Treasurer, Mr. Charles M. Woodruff.

EXECUTIVE COMMITTEE.

N. A. R. D., Mr. Samuel C. Henry.
A. Ph. A., Prof. James H. Beal.
N. W. D. A., Mr. C. Mahlon Kline.
N. A. M. M. P., Dr. A. R. L. Dohme.
A. A. Ph. C., Mr. R. C. Stofer.

On motion, the Secretary cast the ballot of the Conference for the persons named and they were declared elected.

On motion, the Conference then adjourned to meet at the call of the President, in accordance with the Code of Rules and Regulations.

CHARLES M. WOODRUFF,
Secretary.

EDWARD H. HANCE.*



Edward Hance Hance, founder and senior member of Hance Bros. and White, Inc., of Philadelphia, died on December 14, 1914, at the Germantown Hospital. He was eighty-one years old and had been ill for some time.

Mr. Hance had a long and active career. He was born in the Quaker City on November 1, 1833 and received his early education at a private school at Gwynedd, Pa. Later, he returned to Philadelphia, and entered the employ of Gilbert, Wentz and Co. and of Charles Ellis, Son & Co., and became a student at the Philadelphia College of Pharmacy, from which he was graduated in 1854, the subject of his thesis being *Chimaphila umbellata*. He had as his classmate the late John Wyeth, both of them destined to become important figures in American manufacturing pharmacy.

In 1855 Mr. Hance engaged in the manufacture of pharmaceutical and medicinal products on a large scale, the plant being first located near Fourth Street and York Road, in 1857 on Arch Street and 1860 at 509 North Street. Manufacturing Pharmacy was then in its infancy. In 1860 he formed a co-partnership with Mr. J. Clarkson Griffith under the firm name of Hance, Griffith and Co. The business of the firm grew rapidly and in 1867 the plant was moved to Callowhill and Marshall Streets, where it is still located. In 1869 Dr. James W. White became associated with the firm, and it became Hance Bros. and White, continuing as such until its recent incorporation as Hance Bros and White, Inc.

Mr. Hance early identified himself with organization work. He became a member of the Philadelphia College of Pharmacy in 1857, and in the same year joined the American Pharmaceutical Association, becoming a life member.

But it was in the work of the Philadelphia Drug Exchange that he took the deepest interest. Elected as a member of the Board of Directors in 1869, he served as such for several years, and in 1873 was made President. During the following four years, he was an active member of the Board of Directors. With Mr. Alexander H. Jones and Mr. H. B. Rosengarten, he was most zealous in securing protection for the drug and chemical industries of the country and promoting their development. He devoted a great deal of time to the subjects of Mutual Fire Insurance for Manufacturers and Wholesalers and tax free alcohol for use in the Arts. He rendered especially valuable services at the time of the Centennial Exposition in pointing out the possibilities of growth of American manufacturing pharmacy. To his efforts and skill is credited most largely the wide spread advertising that Philadelphia-made pharmaceuticals have received, both in this country and abroad.

In 1878 he was elected Treasurer of the Exchange and was continued as such until 1896, when he was, for the second time, made President. The following year he was again elected Treasurer and was continued in that office until his demise; a total period of service as Treasurer of thirty-six years.

He was one of the earliest members of the Union League, but resigned some years after the Civil War was over, and was an active member of the Philadelphia Board of Trade. He was a prime mover in the organization of the Philadelphia Bourse, being in hearty accord

*It is a curious coincidence that the photograph used in making the illustration of this sketch was taken by F. Gutekunst, of international fame as a photographer, who was a member of the class of 1853 of the Philadelphia College of Pharmacy.

with the objects of that organization and actively working to make Philadelphia and its manufacturing industries most widely known.

He took, also, a deep and active interest in the management of the Germantown Hospital, of which he was a director for many years.

Mr. Hance was widely esteemed for his many lovable qualities of character. "To a large circle of friends," as has been stated, "his death has its personal, poignant regret; to the mercantile and commercial world it marks the cessation of an active force which was of strong influence in the development and upbuilding of a large and important business; while to the community in general it completes a career of effort, and enterprise that was exceptional in its fruitful accomplishments and achievements."

Mr. Hance is survived by two sons—Anthony M. Hance and Edward H. Hance, Jr.

The funeral services were held at the late residence of the deceased, 104 West Tulpehocken Street, Germantown, Philadelphia, on Thursday, December 17th, 1914.

The services were conducted by Rev. Dr. C. H. Arndt, rector of Christ Protestant Episcopal Church, Germantown, and Rev. Dr. Samuel J. Upjohn, rector of the Lasher Protestant Episcopal Church, Germantown.

The honorary pallbearers were: William M. Coates, president of the Board of Trade; Harry H. Good, of New York; Harry B. Rosengarten, president of the Powers-Weightman-Rosengarten Company; Judge William H. Staake, of Common Pleas Court; Francis D. Gowen, General Counsel P. R. R.; George E. Bartol, president of the Philadelphia Bourse; Joseph C. Fraley, of Fraley & Paul, lawyers; William R. Tucker, secretary and assistant treasurer of the Philadelphia Board of Trade, and Consul for Russia; Harry B. French, president of Smith, Kline & French Co.; Dr. Richard V. Mattison, president of Keasbey & Mattison Co.; Richard M. Shoemaker, head of Robert Shoemaker & Co.; Walter V. Smith, president of Valentine H. Smith & Co.; A. Robinson McIlvaine, treasurer of Edward G. Budd Manufacturing Co.; Edward H. Long, head of John H. Long & Co.; Harold E. Gillingham, broker; Prof. Robert W. Blake; Thomas H. Shoemaker, and Harry A. Eveleth.

J. W. E.

GEORGE MERRELL.

"God's Finger Touched Him and He Slept."

On December 12, at his home in Cincinnati, George Merrell, the President of the William S. Merrell Chemical Company, "passed out of the shadow" into eternal rest.

Born in 1846, George Merrell had attained nearly the Scriptural limit of "three score and ten," rounding out a life full of Faith and Charity and Love for all Mankind, and his passing-away was one of those solemn lessons to all that our sands of life are running rapidly, and that we too, like him, should try to leave behind us "foot-prints on the sands of time," that will be of service to our fellows and to all Humanity.

Sprung from a brave New England ancestry, George Merrell embodied in his character, the sturdiness and firmness of the Puritan mingled with the geniality and the sympathy of the aristocracy of the Colonial life, in which brotherhood was felt more than in these material days. A son of a pharmacist, he knew the life and the work of a pharmacist, and thus could enter into intimate relations with the men of his profession.

The Civil War changed his course in life as it did that of many other young men of that trying period. He became a business man rather than a professional one, and developed the firm of the William S. Merrell Co., until it is known thruout the world for the reliability and efficiency of its drug-productions.

He was a 32° Mason, a charter member of the Society of Colonial Wars and the Sons of the Revolution, and an honorary member of many of the pharmaceutical associations in the country. He leaves a widow and three sons. They are Stanley W. Merrell, Judge of the Superior Court; Thurston Merrell and Charles G. Merrell. The following named gentlemen represented the Cincinnati Branch of the A. Ph. A. at the obsequies on Tuesday, the fifteenth ult:— Professors John Uri Lloyd, Charles Apmeyer, Theo. Wetterstroem, C. T. P. Fennell, Dr. A. Zwick, and Messrs. Fred Weissman, D. E. Murphy, Louis Werner, Frank H. Freericks, E. J. Voss, E. L. Pieck and E. H. Thiesing.

NECROLOGY.

GUSTAVUS A. KNABE.

Gustavus Alexander Knabe was born at Maryville, Tenn., July 8, 1853, and moved to Knoxville when only a few years old.

When but sixteen years of age, he entered the drug business as clerk for Chamberland and Albers, of Knoxville, Tenn.

He was graduated from the Maryland College of Pharmacy, class of 1876, and after having worked in the Gay Street Store of Charles Caspari, Jr., of Baltimore, removed to Washington, D. C., where he was employed at the National Hotel Drug Store, then conducted by Scheler and Stephens. After leaving Washington, he served for three years as apothecary on the U. S. S. "Vandalia."

In 1887, he purchased a store at Montgomery, Ala., and with his brother, Henry F. Knabe, conducted a most successful business up to the time of his demise.

Gus Knabe joined the American Pharmaceutical Association in 1876, becoming a life member in 1913.

He was an ardent Mason, holding several offices in his lodge; and was, also, a Knight Templar and a member of the Shrine.

He was a master of his daily work, brought honor upon his craft and won the esteem of all who came to know him.

J. W. E.

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THE ALPERS BANQUET.

The Northern Ohio Branch and the Cleveland School of Pharmacy tendered a complimentary banquet to Dr. and Madam Alpers on the evening of December 2., in recognition of the election of the doctor to the highest office in the gift of American Pharmacy, that of President of the American Pharmaceutical Association as briefly noted in the last issue. The occasion was one which was memorable in American Pharmacy and calls for more complete mention.

Among the guests were all those prominent in Cleveland Pharmacy, of whom may be mentioned: Mr. and Mrs. L. C. Hopp, Prof. and Mrs. J. Spenzer, Prof. P. G. Albrecht, Mr. and Mrs. John Krause, Mr. and Mrs. Wm. Hankey, Mr. and Mrs. Marshall, Mr. and Mrs. Carl Schmitt, Mr. and Mrs. Hechler, Mr. and Mrs. Petersilge, Mr. W. H. Gillmore, Mr. and Mrs. T. Pratt, Mr. and Mrs. Albrecht.

Mr. Lewis C. Hopp presided over the postprandial exercises and welcomed the guests in an eloquent address testifying to the regard and esteem with which Dr. Alpers is held by the drug-world of Cleveland. Letters and telegrams were read from Prof. Joseph P. Remington, ex-President, G. M. Beringer, Prof. H. V. Arny, Geo. C. Dickman, Robert S. Lehman, Hugo Kantrowitz, Felix Hirseman, and Romaine Pierson of New York; Eugene P. Selters and Carl Winters of Cleveland, and Geo. B. Kauffman of Columbus, Ohio.

The various drug-interests of Cleveland were particularly represented by Mr. William T. Hankey, the Wholesale Druggists; Mr. E. Petersilge, the Retail Druggists; Mr. John Krause, the Cleveland School of Pharmacy; Professors Spenzer and Albrecht, the Faculty; Mr. Joseph Albrecht, the Alumni Association, and Mr. Henry Mitchell, the Student Body.

Dr. Alpers responded to their felicitous addresses as follows:

Your kind invitation to meet you here at this festive board was received with mingled feelings of embarrassment and pride. I am fully aware of the high honor that such a gathering confers, and deeply recognize the distinction that the receiver of this honor carries with him. I have asked myself again and again, if I really deserve such an elevation, and am afraid that my ability to serve you and the cause of pharmacy has been overrated and your friendship coming from the fullness of your good hearts has gotten the best of your sober judgment of my worth. This embarrassment, however, is coupled with pride, and I hope justified pride, that such a distinguished gathering as yours should have selected me for this high honor. It is therefore in the full recognition of your kindness and the sincere appreciation of your goodness that I express to you all my heartfelt thanks for this beautiful token of your friendship.

The immediate cause for this testimonial is my election to the presidency of the American Pharmaceutical Association. This office is considered by most as the highest honor within the gift of American Pharmacy and is valued accordingly by all members. I am particularly gratified at my election just at this time for the reason that the year of my presidency will be the twenty-fifth anniversary of my membership. I know that to a great extent I owe my nomination to my dear friend, Mr. Lewis C. Hopp, our genial toastmaster, who himself is an ex-president of the Association. My election by a handsome majority showed me the love and esteem of my

fellow members in the Association and I may be pardoned to confess that the moment when I received the announcement of the vote was one of the happiest of my life.

Of all earthly goods I value my membership in the American Pharmaceutical Association the highest. It has been to me a source of infinite joy, satisfaction, learning, instruction, inspiration and blessing. From the first moment that I entered the meeting of the Association—it was at the memorable meeting at the Profile House in the White Mountains—I knew that I had joined a circle of men with whom to associate was a pleasure, a benefit, an honor. I at once saw the immense field of work that this Association had laid out for its loyal members and I also recognized my own shortcomings. But the revelation that this first meeting brought me, became a spur to work, to study and try to become a peer or even a leader among these men of the highest type. It taught me by a convincing lesson that strict loyalty and upright faithfulness to the higher causes of pharmacy would alone be able to battle with the many impeding obstacles and that this battle was a worthy object, and victory the highest ideal, of a true pharmacist's life. This first impression has never left me, it has become firm conviction and will remain with me as long as I live. In this sense I have worked and fought in the councils of the Association, always true to my convictions, and fearless when I had recognized what I considered true and right. Not that I claim that I always was right; nobody can say that he is right all the time, but no matter how different the opinions of leading men were, how fiercely the battle of argument was waged, I never thought less of my opponents, listened to their words with respect, and weighed them carefully. It is thus that truth and right will come to the surface and finally prevail. And how wonderfully do such battles of brains and conviction shine in comparison with the battles of a terrible war, where victory and murder become identical and the destruction of the works of civilization is called a great deed. Here both gain, victor and vanquished, and far from hating or despising each other, become true friends by the recognition of each other's worth and courage. This loyalty and devotion to the causes of pharmacy shall be the guides during my presidency and with the aid of my fellow officers and friends I hope to become a worthy successor to the many excellent presidents that have in the past shaped the destinies of the American Pharmaceutical Association.

I cannot close my remarks without adding a few words to you, my Cleveland friends, in special and tell you how deeply I am affected by your kindness this evening. It is not quite a year that I came to you, unknown to most of you, and took charge of the School of Pharmacy. From the very first day I met with the kindest welcome and warmest reception by all. Pharmacists, students, trustees, fellow-teachers, and also the ladies of Cleveland, the sweet pharmacisters, seemed to envy with each other to make my stay pleasant and my work successful. And when I saw the great opportunities that Cleveland presented to a loyal and earnest teacher, I at once knew that I had found the right place. I plunged into my work with enthusiasm and energy. I gave the students the best that was in me, and watched over each one with the love and full interest that my responsible position demanded. I have been every day, since my arrival, the first one at the school in the morning and the last one at night, believing that a Dean's loyalty requires him to devote his whole time to the great and beautiful work that such an institution affords. I have prepared every lecture carefully and conscientiously and endeavored through word and example to implant into the hearts of the students a deep-seated love for their profession and devotion to their work. In this ideal conception of my duties, I have received the support and assistance of the trustees and members of the school and we have, by joint work and efforts, been able to create a beautiful and flourishing college. But, I consider the present success only the beginning of my work, and hope that each year will surpass the preceding one in good results.

After these words, I need not tell you that I feel happy here in Cleveland, in your midst, and I assure you that this gathering, and this beautiful token of your friendship and esteem, will be a new inspiration to serve you and pharmacy better and more faithfully than before.

Proceedings of the Local Branches

CHICAGO.

The regular monthly meeting was held Tuesday evening, December 15th, following a dinner in honor of Dr. J. H. Beal, who, on account of his recent change of residence to Illinois, now becomes a member of the Chicago Branch.

At the meeting were gathered representatives of the various pharmaceutical interests of Chicago, to discuss proposed amendments to the state pharmacy law. The meeting was especially timely as an important conference of the pharmaceutical interests of the state will be held in January at Springfield, under the auspices of the State Board of Pharmacy, with the aim of framing desirable amendments to the Illinois pharmacy law.

President Jas. H. Wells presided and introduced Mr. Leo. L. Mrazek, of the State Board of Pharmacy, who presented for discussion

the recommendations of the Board in its recent report to the Governor. These recommendations embraced, first, certain changes in the anti-narcotic sections to make them conform to the model "anti-narcotic" law. In the discussion that followed, Mr. Thos. Potts read the anti-narcotic sections of the Indiana Law, and stated that excellent results in suppressing the illegal use of narcotics were being had under this law. Messrs. Irwin A. Becker, S. K. Sass, H. C. Christensen and others favored the changes in the anti-narcotic sections as recommended by the State Board.

The second recommendation of the Board was as follows:— Making it unlawful for any individual to have in his possession more cocaine or eucaine than can be obtained by means of prescription from a regularly licensed physician, exception to be made in the case of registered pharmacists, physicians, dentists, veterinarians, and hospitals. In the discussion, in which Messrs. J. Riemenschneider, Hugh Craig, C. E. Storer, and others participated, it was pointed out that physicians' prescriptions not unfrequently called for undue amounts of cocaine.

The third recommendation—that of a college pre-requisite requirement from candidates for examination as registered pharmacists, after a brief discussion by Professor W. B. Day, was unanimously adopted.

A fourth recommendation—a penalty for false representation as to being registered in Illinois as apprentice, assistant pharmacist or registered pharmacist, was adopted.

Dr. Beal told of some of the activities of the Drug Trade Conference meeting just concluded in Washington. The chief matters of discussion were the operation of the Harrison Bill, recently passed by Congress, the various stamp tax decisions; the evils of law making by bureaucratic rulings and the need of modification of our present patent laws

Mr. Light spoke of the protest made by the Chicago Retail Druggists' Association against a proposed bill to be presented to the legislature at Springfield, by the Chicago City Council, to empower it to license, tax and regulate drug stores.

A nominating committee, consisting of Messrs. Gray, Becker and Sass, to report previous to the annual election of officers, at the next meeting of the Branch, was elected. Upon motion, also, the date of the next meeting was changed from Tuesday, January 19th, to Friday evening, January 22d, so as to enable members in attendance at the Springfield Conference, January 18th and 19th, to be present and report at the Branch meeting.

E. N. GATHERCOAL, Secretary.

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CINCINNATI.

The regular monthly meeting was held at Lloyd Library, December 15. President E. H. Thiesing occupied the chair. The minutes of the last monthly meeting were approved.

The President announced the death of our esteemed member, G. M. Merrell. The following members had been appointed to pay the last respects of the local branch at the funeral service:— Messrs. D. E. Murphy, Frank H. Freericks, Louis Werner, Edw. Voss, Jr., C. T. P. Fennel, C. A. Apmeyer, F. W. Weissmann, E. H. Thiesing, J. U. Lloyd, Theodore Wetterstroem.

On motion of Frank H. Freericks, the President selected Prof. J. U. Lloyd as chairman, with Frank H. Freericks and Julius Greyer, to act as a committee to frame a suitable resolution of condolence on the death of Mr. Merrell.

Mr. Frank H. Freericks, as chairman of the Committee on Legislation, spoke of the advanced legislation contemplated on the sale and distribution of narcotic drugs.

Prof. J. U. Lloyd, as chairman of the Committee on National Home, spoke of the advantages of Cincinnati for the selection of a site for same.

Miss Bertha Ott presented an excellent and exhaustive paper on "Belladonna," treating her subject from an historical, pharmaceutical and medical standpoint, and also giving quite a few facts and possibilities, regarding the cultivation and preservation of this valuable drug.

Miss Ott received a vote of thanks and was highly complimented on this excellent paper. The Secretary was directed to forward same the Editor, with a request to have this paper published in the Journal.

Mr. Wetterstroem suggested that pharmacists and government officials should use their influence and help to instruct the intelligent and willing farmer, through the "Farmers' Institute," upon the importance and feasibility of cultivating medicinal plants.

Prof. Lloyd emphasized the importance of the history and origin of a drug and asserted

that a great many valuable remedies were originally brought to the notice of the scientific man from outside sources.

The discussion was participated in by several other members, after which the President called upon Mr. Chas. Ehlers, who chose for his subject, "Discussion on U. S. P. and N. F. Preparations." Among others, he took up the Glycerite Iron, Quinine and Strychnine, setting forth that by changing the proportion of the glycerine and water, in a slight degree, a much more permanent preparation will be obtained. He also referred to Syrup Wild Cherry, Liquor Cresolis Comp., Liq. Antisept. Alkal., Elixir Digestiv. Comp., Elix. Iron, Quinine and Strychnine, claiming, improvement may be had by slight changes either in formulas or modes of preparation.

He proposed a modified formula for preparing Solution Aluminum Acetate, stating a permanent 7% solution may be obtained by the following:—

Lead Acetate	600 grains
Alum	360 grains
Sodium Sulphite	60 grains
Water—ad	10 fl. ozs.

An interesting discussion resulted, regarding these preparations, which was taken part in by Messrs. Lloyd, Wetterstroem, Apmeyer, Freericks, Greyer and others.

CHAS. A. APMEYER, Secretary.

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COLUMBUS.

The December meeting was held in the Y. M. C. A. rooms on Wednesday evening, December 9, with President Topping in the chair. The principal address of the evening was made by Mr. Charles P. Hoover, the chemist in charge of the filtration plant of the water supply of the city. His address was a most interesting description of the treatment of an unsanitary water, to make it potable and sanitary, and was accompanied with demonstrations of the effect of certain chemicals upon the river water-supply, and was also illustrated with charts.

An interesting discussion on Parliamentary Law was evoked by the presentation to the Branch of a copy of the latest edition of Cushing's Parliamentary Practice by Mr. Marshall, during the course, of which, many amusing blunders in parliamentary practice in pharmaceutical meetings were stated and criticized.

Dr. C. A. Dye reported the organization of the Membership Committee and stated that the outlook at this time was favorable.

Mr. Young reported for the Joint Committee with the O. S. P. A., on the Medicinal Plant Garden for the University. He stated that the committee were working with the matter and had made a good start. That they were at the present time going over some literature and statistics and he would have a report by the next meeting that would be of more interest to the Branch.

Dr. Dye reported for the Program Committee that the program for the winter had been practically completed and that the Branch would hear some good papers and some good addresses by quite a number of interesting speakers. He further stated that, the speakers would not be all pharmacists but that several chemists in other lines of work had promised to address the Branch.

Dr. Dye presented a written motion to amend the By-Laws that Chapter IV, Article 1 of the By-Laws be amended to read that "Regular meetings shall be held on the second Wednesday of each month."

This motion was received and according to the Constitution will be voted upon at the next meeting.

The President then made a few remarks of welcome to the university students who were in attendance at this meeting, and assured them that they were welcome and that the Branch would be glad to have them attend as many meetings of the Branch as they could.

Dr. Dye then moved a vote of thanks by the Branch to Mr. Hoover and stated that this was one municipal enterprise that had been run without a stain. Seconded by Mr. Young. Unanimously carried.

Dr. Dye moved that the meeting of the Branch adjourn to meet the second Wednesday in January. Seconded by Mr. Will. Carried.

Adjourned at 10:15.

EDWARD SPEASE, Secretary.

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DETROIT.

The Detroit Branch was organized on December 11, 1914, and the following officers were elected:—

President, W. A. Hall; Vice-President, A. A. Wheeler; Secretary, Wilbur L. Scoville;

Treasurer, C. F. Mann; Representative on the Council, L. A. Seltzer.

There was a goodly attendance of the Detroit A. Ph. A. members, and it was decided to hold meetings monthly. Mr. H. B. Mason is the chairman of the Program Committee for the year, and a Committee on By-Laws is expected to report at the next meeting, on January 20th.

Dr. E. R. Larned inaugurated the scientific course by an illustrated lecture on Opsonins and Bacterial Vaccines.

The influence of bacteria and bacterial products on the human system was described and illustrated, and the method for taking the opsonic index of a patient given in full. The manufacture of bacterial vaccines was then described fully and some suggestions given for their use. A lively discussion followed the lecture.

Detroit and Ann Arbor both contain an abundance of able talkers and some very interesting papers are expected in the near future. Ann Arbor is included in this Branch, as are the other near-by towns.

WILBUR L. SCOVILLE, Secretary.

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NEW YORK.

The November meeting of the New York Branch of the American Pharmaceutical Association was held on the evening of the ninth. The meeting opened with President H. V. Arny in the chair.

On motion duly carried, the reading of the minutes of the previous meeting was dispensed with.

Treasurer Weinstein read his report, which was approved.

T. D. McElhenie, reporting for the Council, stated that there had been considerable discussion as to the feasibility of the American Pharmaceutical Association participating in a pharmaceutical exhibit at the coming Panama-Pacific Exposition at San Francisco. Certain members of the Council were in favor of the association making an exhibit, while quite a large percentage of the Council questioned whether or not it would be of sufficient interest to the general public to warrant the expense. C. O. Bigelow, in commenting on Mr. McElhenie's report, stated that the New York College of Pharmacy as an institution had voted against the working exhibit proposition last winter.

No reports were made for the Education and Legislation, Progress of Pharmacy, Membership, or Fraternal Relations Committees as the Chairmen of the various committees were absent. Dr. Diekman, Chairman of the Progress of Pharmacy Committee, sent a note explaining that he was ill and for that reason unable to attend.

The Secretary then read a communication from J. W. England, Secretary of the Council of the parent body, to the effect that papers prepared by A. Ph. A. members must be reserved for initial publication in the Journal of the American Pharmaceutical Association.

President Arny suggested that a dinner should be given in honor of Mr. Caswell A. Mayo, President of the parent association, and C. O. Bigelow made the motion, which was duly seconded and unanimously carried, and it was decided that the dinner should be given some time during the early part of January and that the various local pharmaceutical associations should be asked to cooperate with the New York Branch in tendering the dinner to Mr. Mayo.

Dr. Arny suggested that the local Branch invite Dr. Edward Kremers of the University of Wisconsin to address the members on "The History of Pharmacy" but, after the matter was discussed, it was decided that the New York College of Pharmacy endeavor to have Dr. Kremers give his lecture at one of their early meetings.

The speaker of the evening, Joseph L. Turner, was then introduced and a very interesting paper prepared by himself and Mr. Ralph C. Holmes on "Estimation of Cineol in Oil of Eucalyptus" was read and illustrated. This paper will be printed later in the Journal. It was discussed by Messrs. Raubenheimer, Murray, Mansfield and Wimmer.

Dr. Mansfield was asked to discuss the eucalyptus leaf from a botanical viewpoint, which he did, and at the same time he displayed a specimen of the prime eucalyptus leaf.

Otto Raubenheimer moved that a copy of the paper presented by Messrs. Turner and Holmes be promptly forwarded to Professor Joseph Remington, Chairman of the Committee of Revision of the U. S. P., which motion was carried.

Upon the motion of Dr. William Mansfield, Messrs. Turner and Holmes were given a vote of thanks.

Under the heading of new business, T. D.

McElhenie displayed a bottle of Rhodes Astringent Hair Lotion, the carton and label of which both indicated that the product contained 40 per cent. methyl alcohol. The preparation is manufactured by Arthur Rhodes, Lowell, Mass. He called attention to the deleterious effect of methyl alcohol when used internally or externally and expressed his surprise that any manufacturer should be bold enough to use methyl alcohol in the preparation of a product such as a hair tonic or lotion. He further called attention to the fact that in Greater New York such a product could not be legally sold and indicated that the same applied in a great many other sections.

The meeting was then adjourned.

FRANK L. MCCARTNEY, Secretary.

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PHILADELPHIA.

The regular monthly meeting was held on Tuesday evening, December 8, at the Temple College of Pharmacy.

In the absence of President E. Fullerton Cook, Vice-President J. W. Sturmer called the meeting to order at 8:15 p. m. The minutes of the last meeting were read and approved.

A communication from The Pearson Publishing Company, in answer to the resolution passed at the November meeting, concerning the article, "Pills and Piracy," in Pearson's Magazine, was read. The full text of the letter is as follows:—

Dear Sir:—We acknowledge receipt of your letter of the 16th inst. We can express no regret at the publication of the article to which you refer. The chief complaint of pharmacists seems to be that the author of the article knows nothing about pharmacy. That's just the point. The average man knows nothing about pharmacy, but no pharmacist has denied that it is a practice to charge more for the simplest medicines when a doctor's prescription is presented than is charged when a man merely asks for the medicine. No pharmacist has given us a good reason for this.

However, we want to be right about this as we want to be right about everything else. We have offered space to various pharmacists for an article on the other side of the matter. We offer such space to you.

Yours very truly, (Signed)
THE PEARSON PUBLISHING COMPANY.

It was moved by Prof. C. H. LaWall that a committee of three be appointed to draw up an answer to this letter. The motion carried and the following committee was appointed for that purpose:— Prof. LaWall, Franklin M. Apple and Charles Leedom.

The program of the evening was then taken up and Mr. Harry B. French discussed "The Influence of the European War on the Supply and Cost of Drugs and Chemicals."

Dr. George H. Meeker read a paper on "Vitamines in Their Relation to the Complete Diet."

"The Review of Current Pharmaceutical Literature" was presented by Prof. Freeman P. Stroup.

A vote of thanks, as proposed by Mr. J. W. England, was given to the contributors of the program, after which the meeting adjourned.

Respectfully submitted,
J. ED. BREWER, Secretary.

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PITTSBURGH.

The Branch held its first meeting for the season of 1914-15, Friday evening, December 11th.

The attendance was encouraging and the proceedings exceptionally instructive and interesting.

The program consisted of the following promising subjects for elucidation and discussion: "Diatoms," (illustrated), by Dr. L. K. Darbaker and Dr. F. J. Blumenschein, "The War Tax," by B. E. Pritchard. "A Note on Zinc Oxide Ointment," by Dr. Louis Emanuel.

The illustrations thrown upon the canvas of the many beautiful markings to be found on diatomaceous earths were greatly appreciated, and were a source of surprise and wonderment at their number and range of variation. The descriptive talk by Dr. Darbaker was helpful in directing attention to these markings, while the character of the various kinds of these earths and the sources from which they are obtained by Dr. Blumenschein, were both appreciated by the audience. In the discussion following, many astonishing features concerning these earths were brought out, showing what an intensely interesting study they constitute. In this discussion Dr. J. A. Koch, President Andrew Campbell and Dr. J. H. Wurdack participated, and each speaker disclosed a wide knowledge of the subject that was another surprise, as most of those present were hearing all these things for the first time.

The "War Tax" talk was a feature that

came a little closer to the every-day things that occupy our thoughts in business problems, and the speaker said, that this measure is a problem in its complexities that "no fellow can find out" is not to be questioned. It is the concensus of opinion that "it is a piece of legislation that was entirely uncalled for, and only carried out as one more way out of the woods for the administration to cover up the damage done by the last Tariff law." Analysis of the measure in its text, shows it to have been very loosely and carelessly drawn, and reference to the various rulings issued by the Internal Revenue Department, taken in connection with the law in its wording, shows many inconsistencies and absurdities. Attention was directed to the good work of the various drug trade organizations in succeeding in having so-called patent medicines eliminated from the provisions of the bill, which was appreciated.

Dr. Emanuel's Note on "Zinc Oxide Ointment" dealt with the action of the U. S. P. Revision Committee, retaining benzoated lard as a base for zinc oxide ointment, and the opposition to that action among many pharmacists because of its proneness to rancidity, which is not the case where petrolatum is used. Dr. Emanuel favored the lard-base, for reason that the ointment under discussion has gained its wide reputation as a healing agent under the use of that base, and should petrolatum not prove as therapeutically efficient as a base, this popular medicament may lose its reputation, and thus one more old, time-tried remedial agent will be forced out of our materia medica. Dr. Emanuel called attention to the wide use of the petrolatum base, and warned pharmacists that its use may lead to prosecution under the Federal drugs act, as well as under the drugs acts found on the statute books of a number of states.

The Committee on Nomination of Officers to be voted for at the January meeting presented the following slate:— President, George W. Kutscher; First Vice-President, Peter G. Walter; Second Vice-President, Leonard K. Darbaker; Third Vice-President, Jesse J. Doyle; Secretary, Benjamin E. Pritchard; Treasurer, P. Henry Utech. For chairmen of the various committees:— Program, Frederick J. Blumenschein; Publicity, B. E. Pritchard; Practice, Louis Saalbach; Membership, J. H. Wurdack; Education and Legislation, Andrew Campbell; Medical Relations, Albert F. Judd; Member of Council, three-year term, Julius A. Koch.

B. E. PRITCHARD.

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SAINT LOUIS.

Thirty-five members were in attendance at the meeting of the Saint Louis Branch, held in the St. Louis College of Pharmacy, December 18, 1914. The program of the evening was a most interesting one. Dr. H. M. Whelpley spoke on the subject, "Why The American Pharmaceutical Association?" Prof. Francis Hemm led in the discussion of Dr. Whelpley's paper, and stated that the bound volumes of the Association's yearly proceedings are the best reference books a pharmacist can own.

Dr. Leo Suppan gave an informal talk on "Historical Pharmacy of Missouri" and "The Missouri Pharmaceutical Association Exhibit at the Missouri Historical Society, Jefferson Memorial Building, St. Louis." He gave an interesting account of the early pharmacy of Missouri, and strongly urged the pharmacists of the state to take an active part in the collection of important historical material, relating to pharmacy.

JULIUS C. HOESTER, Secretary.

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WASHINGTON, D. C.

The regular December meeting was held December 16, 1914, at 8:00 p. m., at the Institute for Industrial Research, Nineteenth and B streets, N. W., Washington, D. C.

The election of officers resulted in the following, all of whom were elected unanimously:—

President, Dr. H. E. Kalusowski; First Vice-President, Henry B. Floyd; Second Vice-President, Dr. W. W. Stockberger; Secretary, S. L. Hilton; Treasurer, W. S. Richardson. Chairmen:— Committee on Publicity, Dr. Lyman F. Kebler; Medical Relations, Frank C. Henry; Membership, Wymond H. Bradbury; Scientific Communications, H. C. Fuller; Legislation, G. W. Hurlebaus.

After the disposition of the business before the meeting, President Richardson introduced Dr. C. D. Marsh, of the Department of Agriculture, who lectured on "Poison Plants Found on the Stock Ranches." His graphic descriptions of these plants and their ravages, illustrated by many lantern slides, some of

which were naturally colored, were exceedingly interesting, and an education almost in themselves. Most of his remarks were devoted to the *Cicuta,* or Water-hemlock, the Loco, and Larkspur. The effects of these poisons, and the rapidity of their action, were shown by a number of views of various cattle and sheep, taken but a few minutes apart.

The reading of Dr. William Salant's paper on *"Chenopodium,* (American Wormseed)", was postponed, because of the lateness of the hour, to a meeting in the near future.

Both Mr. Richardson and Dr. Marsh were given votes of thanks at the close of the meeting, the former for the unusually attractive programs he has secured the branch for the year, the latter for his most excellent and instructive entertainment.

Very truly yours,
HENRY B. FLOYD.

Council Business

COUNCIL LETTER NO. 10.

To the Members of the Council:—

The following Budget of Appropriations for 1915 is submitted by the Committee on Finance:—

PROPOSED BUDGET OF APPROPRIATIONS FOR 1915.

Appropriation.		
No. 1 Salaries		$ 5500
No. 2 Journal		6600
(a) Publication	$5000	
(b) Clerical Expenses	900	
(c) Postage and Stationery	450	
(d) Freight, Drayage and Miscellaneous	250	
No. 3 Printing, Postage and Stationery		900
No. 4 Clerical Expenses Secretary's Office		416
No. 5 National Formulary		1000
No. 6 Miscellaneous Expenses		100
No. 7 Drayage, Freight and Expressage		100
No. 8 Stenographers		350
No. 9 Travelling Expenses		600
No. 10 Committee on Membership		250
No. 11 Committee on Unofficial Standards		100
No. 12 Year Book		2500
No. 13 Badges and Bars		50
No. 14 Certificates		50
No. 15 Premium on Treasurer's Bond		50
No. 16 National Drug Trade Conference		200
No. 17 Journals for Reporters		35
No. 18 Section on Scientific Papers		25
No. 19 Section on Education and Legislation		25
No. 20 Section on Commercial Interests		25
No. 21 Section on Practical Pharmacy and Dispensing		25
No. 22 Section on Historical Pharmacy		50
No. 23 Committee on Pharmacopœias and Formularies		25
No. 24 Women's Section		50
No. 25 National Syllabus Committee		25
		$19,051

At the Detroit (1914) meeting of the Association, the Section on Pharmacopœias and Formularies was abolished, but there was created, as a sub-division of the Section on Practical Pharmacy and Dispensing a Committee on Pharmacopœias and Formularies.

Do you approve of Budget of Appropriations for 1915 as above proposed? This will be regarded as *Motion No.* 19 (*Approval of Budget of Appropriations for* 1915.)

J. W. ENGLAND,
Secretary of the Council.

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COUNCIL LETTER NO. 11.

December 15, 1914.

To the Members of the Council:—

The following communication has been received:—

"Members of the Council, Gentlemen: It will be recalled that in Council Letter No. 2 (October 2, 1914), the subject of giving the Committee on Publication enlarged powers, etc. (as recommended at the Detroit (1914) meeting in President Beringer's address, approved by the Association and referred to the Council) was discussed, and under Motion No. 3, the Council authorized the Committee on Publication to effect a re-organization and to systematize its work.

Your Committee on Publication has been giving careful consideration to the subject and would report as follows:—

Article 11, Chapter V, of the by-laws of the Association relating to the Treasurer reads: "He shall pay no money except on the order of the General Secretary, accompanied by the proper voucher."

Rule Third of the General Rules of Finance, as adopted at the Detroit (1914) meeting reads:—

"The correctness of every bill shall be certified to by the person contracting the same and the General Secretary, and the latter

shall note on the bill the appropriation against which the same is to be charged. The bill shall then be submitted to the Chairman of the Finance Committee for approval before payment is made. A warrant shall then be drawn and signed by the General Secretary, upon receipt of which, together with the original bill and voucher, the Treasurer shall draw a check for the amount."

This rule superseded former Rule Third of the General Rules of Finance (Year Book, 1912, XXXII.)

It should be noted that both the by-law and rule are in full force and effect.

President Beringer recommended in his annual address that the Committee on Publication be given more extended power in the conduct of its work, and this recommendation was referred to the Council which authorized the Committee to effect a reorganization and to systematize its work, i. e. to organize a proper clerical and editorial staff so as to efficiently conduct the business of the Committee. It was suggested that to avoid the delay incident to the present method of paying the bills of the Association, the Committee's appropriation be paid to it quarterly, and that the Committee elect a Treasurer who should honor drafts made by the Editor and counter-signed by the Chairman and keep correct accounts of all receipts and expenditures on behalf of the Committee subject to the approval of the Council and Auditing Committee thereof.

But it is a serious question, in the light of Article 11, Chapter V, of the by-laws and Rule Third of the General Rules of Finance, as above quoted, whether we have the authority to pay bills other than through the General Secretary and Treasurer and as indicated.

The "by-law" was not amended at the Detroit meeting, and the "rule" was newly enacted, and both are in direct conflict with the plan proposed for the business of the Committee.

Fortunately, a careful study of the situation seems to indicate that it is not necessary to inaugurate the plan of paying bills proposed, but that, with the formulation only of certain new "Rules of Publication," we can gain the end desired.

The objects aimed at are to control the expenses of the Journal and publications of the Association, to secure the prompter payment of bills, more especially bills requiring immediate payment, such as those for postage drayage, expressage, etc., and to relieve the Editor from the necessity of advancing money from his own pocket to pay the bills of the Association.

To this end the following rules are recommended for adoption:—

GENERAL RULES OF PUBLICATION.

1. All bills on account of the Journal shall be certified to by the Editor and sent as soon as possible to the Chairman of the Committee on Publication for approval and then sent by the latter to the General Secretary for payment in accordance with Article 11, Chapter V, of the by-laws and Rule Third of the General Rules of Finance, except bills for postage, stationery, drayage, freight, expressage, miscellaneous and clerical expenses of the Office of the Journal (Petty and Clerical Expenses, Journal Office) which shall be paid as provided for in Rule 2 of these rules.

2. Bills for postage, stationery, drayage, freight, expressage, miscellaneous and clerical expenses of the office of the Journal (Petty and Clerical Expenses, Journal Office) shall be paid by check by the Editor of the Journal out of a deposit of $300 to be made to the credit of the Editor of the Journal by the American Pharmaceutical Association in a bank to be approved by the Committee on Publication.

The Editor shall be bonded for $500 at the expense of the Association.

The procedure for the payment of such bills shall be as follows:—(1) At the end of each month, the Editor shall send all paid-and-receipted bills and cancelled checks, with an itemized bill or statement, to the Chairman of the Committee on Publication for approval; (2) After approval, the Chairman of the Committee on Publication shall send the bills and checks to the General Secretary; (3) the General Secretary shall draw an order for the amount of the bills in accordance with Rule Third of the General Rules of Finance and forward the order and bills to the Treasurer; and (4) The Treasurer shall send the Editor a check to cover the amount of the bills and thus increase the bank balance.

3. All bills on account of the Year Book, National Formulary and other publications of the Association shall be certified to by the person contracting the same and approved by the Chairman of the Committee on Publication and sent by the latter to the General Secretary before payment in accordance with Article 11, Chapter V, of the by-laws and Rule Third of the General Rules of Finance.

The advantages of this method are many. It is simpler than having a Treasurer of the Committee through which to pay bills, and it does not require that one-fourth of the annual appropriation of each item of the work of the Committee shall be paid

quarter to the Treasurer. The present machinery for the payment of bills is continued, the only change being the control to be given to the Chairman of the Committee on Publication in the payment of bills. In addition, the items of the annual budget of appropriations will not need to be changed.

Furthermore, the $300 is practically advanced or loaned to the Editor under bond and the bills are really not finally paid by the Association until the Treasurer sends the check each month to cover the amount of vouchers paid, so that the Association is protected in every way.

The above proposed "Rules of Publication" were submitted to Julius A. Koch, Chairman of the Finance Committee, and he heartily endorses them.

In this connection, General Secretary Day writes as follows:—

"I have Letter No. 8 of the Committee on Publication. I like the plan of placing a fund of $300 in the hands of the Editor from which he is to make by check such disbursements as may be necessary to cover the small expenses of his office. This amounts practically to establishing in the Editor's office a petty expense fund.

"As Actuary of the School of Pharmacy I have for years had such a petty expense fund. You may be interested in knowing how I manage this fund. The amount deposited with me by the University for this fund was $250. I placed this amount in my bank subject to check but separate from my personal checking account. I draw the checks from the petty expense fund as W. B. Day, Actuary. At the end of each month I report to the business office of the University the condition of the fund and turn in a bill for the expenditures of the month with the receipts for the individual items of expense attached thereto. A duplicate of this bill is retained for my files. The University check for the amount of this bill is sent to me in due time, thus restoring original amount of the fund. My cancelled checks are my personal receipts for the expenditures from this fund and are retained in my office. I am thus able at a moment's notice to give a statement of the condition of this petty expense fund and to make a complete accounting therefor. I think some such plan might be followed if the proposed petty expense fund for the Editor's office is decided upon. You may record me as being in favor of this plan."

The Committee on Publication submits the above "Rules of Publication" for your consideration and asks that they be approved.

Very truly yours,

J. W. ENGLAND,

Chairman of Committee on Publication."

Further communications have been received relative to *Motion No.* 17 (C. L. No. 7), as follows:—

John B. Thomas writes:—

"Replying to A. Ph. A. Council Letter No. 9, it seems to me that it would be best to table Motion No. 17 right now.

"Although I voted to extend the invitation and would have heartily welcomed the acceptance of the same, I fear that further discussion of this motion might be resented and result in a lack of harmony in our own ranks.

"In my opinion, we cannot afford to entertain this subject at this time."

Thomas D. McElhenie writes:—

"Relating to the matter of invitation to the Japanese Pharmaceutical Association, I think if there is yet time I will ask leave to reverse my vote to the negative. It seems to me very likely that Dr. Schneider was actuated probably by a feeling of good fellowship coupled with the natural enthusiasm of a local Secretary to make his meeting a notable success, and as a well-known scientist he very likely has friends and correspondents in Japan and probably throughout the world and may be familiar with the Japanese language, but did not think of the long, long way from Tokio to Frisco. I scarcely think that the Japanese Society would take the matter seriously. They could not possibly muster enough of their members in San Francisco to hold a regular meeting of their own body and they could not understand the proceeding of our meeting except by the use of interpreters, which would be burdensome and tedious. Besides, there is the duty of host for our Association to the visitors and no fund available for such use.

"If there is a national body of pharmacists in Mexico or Central America they might like to meet in Frisco, but the same difficulty of language would prevail."

L. E. Sayre writes:—

"In response to your request that there be an expression of opinion in regard to the invitation to the Pharmaceutical Society of Japan, I would say that, after reading the communications contained in Letter No. 9 and previous communications, I am impelled to change my vote from the affirmative to negative.

"I am inclined to think, however, that it would be better to reconsider the former motion. I would be glad to make this motion or second the motion that any other one should make, asking for a reconsideration.

"I am sorry, however, that this reversal of the vote, in view of what has already been done, puts us in a rather embarrassing position, but through no fault of the Council."

By "former motion," Professor Sayre probably refers to Motion No. 12 (C. L. No.

6) on invitation to Canadian Pharmaceutical Association, which motion, while it received a majority of affirmative votes, can readily be reconsidered, if desired, as no notice of action has yet been sent to the Canadian Pharmaceutical Association.

Frank H. Freericks writes:—

"With reference to Motion No. 17, and your request for an expression, I would point out that I voted against extending an invitation to the Society of Japan, as also against extending such invitation to the Canadian Society. My reason for voting against such invitation was primarily based on the fact that when I as an individual extend an invitation, I mean to, and hope to have it accepted. Personally, I could not wish for the acceptance of our invitation by either Society, because it would only tend to further interfere with our own work at the San Francisco Convention, thus resulting to the disadvantage of our Association. It is this feature which controlled me entirely in voting No. on both Motions, however, I do not want to dismiss the subject without saying, that a spirit of neutrality owing to the War was also in my mind. People who are directly concerned in the War, are apt to have very strong and possible prejudiced opinions. It is altogether likely if the Canadian or Japanese Society should meet with us, that there would be at least an expression of personal opinion. Taking it for granted that such expression would be in keeping with the opinion which seems to prevail in Canada and no doubt in Japan, I personally would find it very difficult to avoid expressing a different opinion, for after all, speaking for myself I am only human, and have very strong convictions regarding the War which would be I am sure unpleasant for either men from Canada or Japan to hear. However, as stated, my vote was controlled primarily by the belief that such invitation if accepted would only add to our difficulties which of themselves are plenty in an Exposition City."

Motion No. 20 (Tabling of Motion No. 17.) Moved by J. B. Thomas, seconded by C. A. Mayo, that *Motion No. 17 (Extension of Invitation to Pharmaceutical Society of Japan to meet in San Francisco in 1915)* be tabled.

Motion No. 21 (Applications for Membership.) You are requested to vote on the following applications for membership:—

No. 52. Leonard Ellsworth Coolbaugh, In care McKinney's Pharmacy, Corsicana, Texas, rec. by Freeman P. Stroup and E. Fullerton Cook.

No. 53. Harry S. Harrison, 417 S. Clinton St., Baltimore, Md., rec. by H. A. B. Dunning and J. W. Westcott.

No. 54. Mrs. Anna L. Wiley, Hartville, Ohio, rec. by Anna G. Bagley and George B. Kauffman.

No. 55. Elmer A. Watson, Clayton, Ill., rec. by H. M. Whelpley and J. W. Mackelden.

No. 56. Jose Antonio Gonzalez Jones, P. O. Box 166, Barranquilla, Columbia, S. A., rec. by H. M. Whelpley and J. W. Mackelden.

No. 57. Mansfield B. Herald, 1027 Story St., Boone, Iowa, rec. by Zada M. Cooper and Wilber J. Teeters.

No. 58. Eduardo Garcia Faundo, Monte 497, Havana, Cuba, rec. by Jose P. Alacan and Jose Guillermo Diaz.

J. W. ENGLAND,
Secretary of the Council.

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COUNCIL LETTER NO. 12.

December 26, 1914.

To the Members of the Council:—

Motions No. 19 (Approval of Budget of Appropriations for 1915), No. 20 (Tabling of Motion No. 17), No. 21 (Applications for Membership; Nos. 52 to 58 inclusive) have each received a majority of affirmative votes.

The following communication (December 17) has been received from J. A. Koch, Chairman of the Finance Committee:—

"I believe that in order to avoid any chances of misinterpretation, paragraph 3, of Section 2, General Rules of Publication, page 35, Council Letter 11, should read:

"The procedure for the payment of such bills shall be as follows: (1) At the end of each month, the Editor shall send all paid-and-receipted bills and cancelled checks, with an itemized bill or statement, to the Chairman of the Committee on Publication for approval; (2) After approval, the Chairman of the Committee on Publication shall send the bills and checks to the General Secretary for payment in accordance with Article 2, Chapter 5, of the by-laws and Rule Third of the General Rules of Finance; and (3) The Treasurer shall send the Editor a check to cover the amount of the bills and thus increase the bank balance."

The change proposed involves no change in the intent of the rule, but simply clarifies its meaning. If there is no objection, the new paragraph will be substituted for the original paragraph.

The Detroit Branch, A. Ph. A. was organized on December 11, 1914. The following officers were elected: President, W. A. Hall; Vice-President, A. A. Wheeler; Secretary, Wilbur L. Scoville; Treasurer, C. F.

Mann; Council Representative, Leonard A. Seltzer.

At the meeting of the City of Washington Branch, A. Ph. A., held December 16, 1914, Samuel L. Hilton, 22nd and L Streets, N. W., Washington, D. C., was elected representative to the Council from the Branch for the years 1915, 1916 and 1917, succeeding Henry B. Floyd.

The following letter (December 15) has been received from Albert Schneider:—

"I am very much afraid that some of our good friends are making much ado about nothing. It strikes me that extending the invitations to our brothers across the sea is but a kindness which, so it appears to me, we owe them merely as a matter of special consideration and courtesy occasioned by the great San Francisco Exposition. You may rest assured that the Exposition Management are heartily in accord with us in the matter. We do not obligate ourselves further than to show our visitors such consideration and kindness as we are in position to offer. We are in no wise obligated financially. The Exposition Management will gladly grant meeting-hall privileges and the local druggists would no doubt join us in showing them some courtesy.

"I desire to state further, as prime mover in extending the invitation, that the motive was wholly neutral and impartial. In other words, the invitations were purely intellectual, based upon the consanguinity of common scientific interests, and entirely apart from any personal opinions and feelings regarding nationalities."

The following letter (December 23) has been received from F. T. Gordon:

"I have given a good deal of thought to the matter of inviting the Pharmaceutical Society of Japan to hold joint sessions with us at our San Francisco meeting and I am afraid that we have unwittingly stirred up the depths of international feelings. I lived in Japan for three years and know what a proud and sensitive people they are and that they keenly resent any patronage of superiority from us or any other nationality. I fear the matter has gone too far now, for copies of our Journal are doubtless in their hands by this time and our comments must cut deeply to the quick when read by the educated Japanese. The whole matter was a blunder, well meant as are all blunders, but hard on the victim. What the Association should have done, in my opinion, was to recognize no nation, no class, no creed, but that of pharmacists working for the welfare of all mankind to alleviate suffering and to make better men of those entrusted to our care. When the world is torn by war we are all brothers, not fighters.

Therefore, I make the following motion: That the American Pharmaceutical Association send, individually and collectively, its sincere appreciation of the unselfish work done by brother pharmacists of all nations in relieving the sufferings of war and of the sacrifices made, and that as Americans of every national descent we honor them and pray for their welfare and future peaceful prosperity. Also:—

That copies of this motion be sent to the appropriate officers of the pharmaceutical associations of the various nations as an expression of the sympathy and good will of their brother pharmacists in the United States and as a New Year's greeting, a new year of peace and prosperity for all. Also:—

That the President of the American Pharmaceutical Association be empowered to have suitable forms or letters made that will express this sentiment and forward them under his official title through the Secretary of the American Pharmaceutical Association."

Mr. Gordon's motion is seconded by J. W. England. Do you favor it? It will be regarded as *Motion No.* 22 (*Greetings to Pharmacists and Pharmaceutical Associations of other Nations.*)

Motion No. 23 (*Approval of General Rules of Publication.*) Moved by C. A. Mayo, seconded by Dr. F. E. Stewart, that the General Rules of Publication as set forth in Council Letter No. 11 be approved.

Motion No. 24 (*Election of Local Secretary for* 1915.) Moved by Dr. F. E. Stewart, seconded by F. T. Gordon, that Albert Schneider of San Francisco, be made local Secretary for 1915.

No action has been taken by the Council on the question of the proposed A. Ph. A. Exhibit at the Panama Pacific Exposition, and to dispose of the question, William R. White writes as follows:—

"In regard to the discussion of the question of the A. Ph. A. having an exhibit at the Exposition, will say that I think we are not able to finance such an undertaking and in view of the uncertainty of getting the assistance necessary from other sources, and in order to settle this question before the Council, I move that the Council disapprove of the effort being made to have an exhibit at the San Francisco Exposition."

The above motion is seconded by George M. Beringer, and will be regarded as *Motion No.* 25 (*Disapproval of Proposed Exhibit at the Panama-Pacific Exposition.*)

J. W. ENGLAND,
Secretary of the Council.

The Pharmacist and the Law

LIABILITY FOR BOTTLE EXPLOSION. PRIVITY OF CONTRACT.

In an action for injuries caused by the bursting of a soda-pop bottle, the defendants were engaged in manufacturing and selling soda-pop, and the plaintiff and her husband sold soft drinks. They bought from the defendants a case of their goods, and, after it was delivered, the plaintiff lifted one of the bottles from the case and was carrying it to the ice box when the bottle exploded, so injuring her eye that it had to be removed. The trial court directed a verdict for the defendants. On appeal it was held that there was sufficient privity between the plaintiff and the defendants for her to maintain an action for her injuries, though she was not a partner with her husband, and was merely acting under his direction. If, it was said, the vendor is to be held liable at all for his negligence in cases of this character, there is no reason for limiting that liability in favor of the vendee individually, who may never personally be exposed to the danger resulting from this negligence.

Actionable negligence, has been defined as a breach of duty resulting in injury to some person to whom that duty is legally owing, and the duty here was not merely to so charge a bottle as that its contents might not be wasted, but also to exercise that care which an ordinarily prudent person would use, to avoid the infliction of an injury which might reasonably be expected to follow the failure to use this care; and that duty was owing, not only to the vendee, but also to his employes, who performed the service which the parties must have contemplated as necessary to be performed when the sale was made.

The court cited the case of O'Neill v. James, 138 Mich. 367, 101, N. W. 828, 68 L. R. A. 342. 110 Am. St. Rep. 321, 5 Ann. Cas. 177, as one where the facts are strikingly similar to the facts in the present case, except that the party injured by the explosion of the bottle was an employe of the owner of the business, and there was no proof of knowledge upon the part of the defendant that the bottle which exploded had been improperly charged with the gas. In that case the plaintiff has recovered a substantial judgment, which was reversed on appeal because of the insufficiency of the evidence to sustain the allegations of the complaint. It was held that a manufacturer of champagne cider, which is ordinarily not dangerous, is a common article of commerce, and is manufactured by him by proper machinery, and not excessively charged, is not liable for injuries to an employe of his customer through the explosion of a bottle, unless he knows that for some reason such bottle is peculiarly liable to explode. The court distinguished that case from the present, because there was proof in the latter, tending to show that the bottle was improperly charged, and that the defendants were aware of that fact, or were at least in possession of such knowledge and information on that subject as would impute knowledge to them of that fact. The ordinary law of principal and agent would charge the defendants with any knowledge possessed by their employes who were actually engaged in charging the bottles.

The evidence presented no issue for submission to the jury upon the question of the use of defective bottles, as the proof showed the bottles were purchased from a manufacturer whose bottles were of standard grade and quality, and the only theory upon which a recovery could be sustained, was that the defendants were guilty of negligence in charging the bottle, and that this negligence was the proximate cause of the injury. On the ground that the latter issue should have been submitted to the jury, the judgment for the defendants was reversed.

Colyar v. Little Rock Bottling Works, Arkansas Supreme Court, 100 S. W. 810.

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IMPLIED WARRANTY OF FITNESS FOR PURPOSE—KNOWLEDGE OF BUYER.

In an action for the purchase-price of a secret chemical preparation known as "dinamine" for killing grass and weeds, the defense was an implied warranty that one application was sufficient, whereas two applications were required. It was held that where a manufacturer sells an article for a particular purpose, so that the buyer necessarily trusts to his judgment, the law implies a promise that the article is reasonable, fit and proper for such purpose; but such implied

promise is conditioned and dependent upon the use of the article in the manner, quantity, and under the conditions prescribed by the manufacturer, and, when not so used, then such promise is not implied. It appeared that the defendant railway company's general manager had been informed before the contract was made that the seller claimed that two applications were necessary. It was held that there was no implied warranty that one application would suffice, and the fact that the defendant's other representatives, those to whose judgment and discretion the purchase of the "dinamine" was committed, did not have this information imparted to them by the general manager did not alter the situation. Evidence, therefore, that such representatives were not so informed, and would not have made the purchase had they known that two applications were necessary, was not material. Judgment for the plaintiff was affirmed.

Missouri, K. & T. Ry. Co. of Texas v. Interstate Chemical Co., Texas Civil Appeals, 169 S. W. 1120.

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DECEASED SINCE NOVEMBER 18, 1914.

GEORGE W. BOYD, Washington, D. C.

REINSTATED.

ALBERT M. TODD, 204 N. Rose St., Kalamazoo, Mich.

OIL OF PEPPERMINT.

Weather conditions during the early spring and throughout the summer were extremely favorable, and a thorough canvass made by our representative in producing districts early in June showed an increase of over 3,600 acres over the acreage of 1913.

Throughout the season the peppermint plants looked very promising, and the distilling was begun as early as the latter part of June, which is quite unusual. It furthermore developed that the yield was exceptionally large and averaged at least 30 pounds of oil per acre, generally more, and, in consequence, a production of between 550,000 and 600,000 pounds of oil has to be reckoned with this year, while the annual consumption is estimated to amount to about one-half of this quantity.

Stocks of old oil were nearly exhausted before the new crop could be marketed, and during the months of May and June the high price of $4.25 per lb. was reached. As soon as the new oil was available a rapid decline took place, until the present values prevailed.

The export demand, on account of the European war, being very small only, and, on account of business conditions in general, it would not be surprising if the declining tendency which has so far prevailed would continue, and unless next year's crop should prove to be an entire failure, it is reasonable to assume that peppermint oil may be bought at moderate figures for some time to come.

Since the high prices which prevailed during the last few years enabled the farmers to take better care of their fields, the quality of this year's oil was generally found to be excellent. — *From Advance Circular, Fritzsche Brothers.*

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Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-Second Annual Convention

MINUTES OF SECTION

The Third Session of the Section was held on Thursday, August 27, on the boat while on the trip to St. Clair Flats.

Chairman Nitardy presided over the meeting and, as the first order of business, called for a discussion on Mr. Hall's paper on "A New Antidote for Corrosive Sublimate Poisoning," read at the previous session. [Printed in this issue.]

On motion of Mr. Raubenheimer, the paper was referred to the Scientific Section for study, pharmacologically, and the Secretary was instructed to forward the paper to that Section.

Mr. Jeannot Hostmann read a paper entitled, "Assaying Galenicals." [Printed in this issue.] This paper was briefly discussed by Messrs. Mansfield, Nitardy, Weinstein, Hynson, Raubenheimer and Hostmann, opinions being expressed that the cost of the equipment needed by a retail pharmacist was but slight and that such equipment was an extremely valuable addition to any store, Mr. Weinstein expressing the opinion that a microscope was a more essential agent for better work in a drug-store than is a cash-register.

Chairman Nitardy read a paper on "The Preparation of Flake Agar-Agar." [Printed in this issue.] In commenting upon this paper, Mr. Raubenheimer suggested cutting the agar-agar up with scissors, and Mr. Apple stated that he had found a tobacco-cutter useful in such work.

The next business considered was the pharmaceutical questions proposed by Chairman Nitardy, as follows:—

Question 1:—Creosote..... one drachm
Syrup Hypophosphites Co..... eight ounces
Cod Liver Oil..... eight ounces
Mix.

How would you dispense this, and why?

DISCUSSION.

PROF. OTTO RAUBENHEIMER:—"This prescription will necessarily be a "shake mixture" and should be dispensed with a "Shake Well" label. The creosote might be dissolved in the oil and then the syrup added gradually with constant shaking. A still better way would be to emulsify the creosote by means of powdered acacia and water, then to add the oil gradually with constant agitation and finally the syrup. The latter method is undoubtedly the more pharmaceutically correct."

MR. GRAY:—"I would mix the creosote with the oil and then add the syrup, using a bottle large enough to admit of a vigorous shaking on account of the oil and syrup not being miscible. I would dispense the preparation with a 'Shake Label.' Preferably, I would dispense the solution of the creosote in the oil in one bottle and the syrup in another, mixing the two preparations at the time of administration."

MR. SCHULZE:—"I would dispense this prescription in the form of an emulsion made by using powdered acacia and water, then thoroughly incorporating the oil in that way with the other ingredients and making a more sightly and palatable preparation."

MR. FERTÉ:—"I would mix the creosote with the oil and emulsify. Then add the Syrup Hypophosphites Compound."

PROF. LASCOFF:—"There are several ways of preparing this prescription, but the one approved by me is to emulsify the creosote and the syrup, with two and one-half drachms of powdered acacia, adding the oil in small portions until a uniform mixture results. I put this mixture aside for about ten days, and no separation occurred. In all other instances it formed a heavy thick mixture which could not be dispensed in an ordinary bottle."

MR. SASS:—"I would dispense it just as it is written, but would attach a shake label."

MR. APPLE:—"I think the physician should be consulted before adding any emulsifying ingredients. I would dispense such a prescription just as it is written with the caution to shake well before administration."

Question 2:—What do you think of using a specially shaped bottle for dispensing poisonous or dangerous preparations? Where would you draw the line as to what and what should not be dispensed in these kind of bottles?

DISCUSSION.

MR. LEMBERGER:—"When physicians mark the prescription "Poison," then it is justifiable to use such bottles."

MR. THOMAS:—"The pharmacist should use his own judgment in the matter."

PROF. RAUBENHEIMER:—"Suppose a physician writes a prescription for Fowler's Solution with direction to use two drops in water three times a day. What would you do? Would you label it 'Poison?'"

MR. OSTERWALD:—"In such cases we use a small strip label stating that to obtain the desired results, the medicine must be used strictly according to the directions. This label is printed with red ink on white paper. We would not label it 'Poison.'"

DR. HANCOCK:—"We use a label reading, 'Use with care according to directions.'"

PROF. RAUBENHEIMER:—"It is certainly very desirable that a specially shaped bottle should be used for dispensing poisons. Such is the custom in practically all the countries of Europe and it is only a question of time when this practice must be adopted in the United States. The best form of 'Poison bottle,' in my opinion is one provided with sharp points. These serve as a safeguard either day or night. It is also desirable to use a colored bottle for preparations intended for external use. Frequently, very frequently, such preparations as a carbolic wash, containing perhaps two per cent of phenol, are dispensed in a flint-glass bottle such as are used for preparations intended for internal use. I have been in the habit of using amber-colored bottles for those intended for use externally and I have found this precaution to be of value and to be generally approved."

MR. SCHULZE:—"I do not think that the shape of the container is especially essential in dispensing poisonous substances. I believe that after we have attached proper caution labels,

we have performed our duty. Carelessness, neglect to observe directions of labels, and suicide we can only partially guard against."

MR. FERTÉ:—"A colored bottle with a distinctive shape is desirable to be used if there is an understanding in relation to them. Medicines which in teaspoonful doses would be fatal should be dispensed in such bottles."

PROF. LASCOFF:—"Owing to the fact that many errors are made by persons taking, internally, medicines which were intended for external use, all bottles containing dangerously poisonous substances should be dark-colored and, preferably, of a triangular shape, to distinguish them from those containing medicines intended for external use."

MR. GRAY:—"A bottle with diamond-points, with a stopper of corresponding shape, is an excellent one to use in a limited degree, say for carbolic, nitric, hydrochloric, sulphuric, glacial acetic, hydrocyanic and nitro-hydrochloric acids, stronger ammonia water and formaldehyde, and for such preparations as Liquor Cresolis Compound, Wine of Colchicum, Fowler's, Pearson's and Donovan's Solutions and for potent tablets; also for fluid extracts of aconite, belladonna, digitalis, cannabis indica, adonis vernalis, gelsemium, hyoscyamus, nux vomica, opium, physostigma veratrum and strophanthus. These with the addition of oxalic acid, tartar emetic, paris green, corrosive sublimate, sugar of lead, potassium ferro- and ferri-cyanid, and potassium dichromate about covers the field. In my opinion the general use of the poison-label has a tendency to cause a disregard of the same."

Question 3:—What is the best container for dispensing ointments on prescriptions?

A PLEA FOR REFORM IN THE DISPENSING OF OINTMENTS AND SIMILAR PREPARATIONS.

F. W. NITARDY, PH. C.

In such common use are ordinary glass ointment-jars and metal boxes as containers for ointments and similar soft preparations, that their unclean and insanitary feature fails to impress us without special attention being called thereto.

Ointments, etc., are used as an application to skin, mucous membranes or exposed surfaces. These are frequently infectious, and by the usual mode of application the medicament must necessarily become contaminated. It is not an uncommon occurrence that several people, or various members of a family, will use an ointment, each, in their turn, dipping into it with fingers infected by the disease for the alleviation of which it is applied.

Aside from the dangers of contamination with pathogenic bacteria, the imperfect seal, as well as carelessness on the part of the consumer, frequently causes the preparation to become unsightly, altered or spoiled by oxidation, evaporation and other effects of exposure to atmosphere, light and dust.

Economically, these containers are wasteful as the last portions of their contents must frequently be thrown away. Even from a stand-point of convenience we can hardly find an argument in support of their use.

The collapsible-tube is free from these objections and serves as a container, protecting its contents from every form of contamination or exposure. It is easily filled and more convenient for the patient. Properly dispensed, it makes a neater and more attractive package. Its additional cost is trifling, compared to its advantages, and this can easily be added to the customary charge without causing complaint on part of the customer.

For prescription-use it is preferable to have lacquered pure tin tubes in assorted colors that fit into hinged boxes lined in corresponding colors. In this

way two or more tubes of ointments of the same size may be prescribed for one patient without danger of confusion. The number, doctor's name and directions are placed on the box. If desired, the tube may also be numbered, either before filling, with a steel numbering machine, such as is usually used for prescriptions; or after filling, with an ordinary lead pencil. In the former case it is best to have a cylindrical hardwood block with a flattened place on which a piece of cardboard is pasted to act as a cushion; the block should just fit the tube; the number may then be indelibly impressed into the soft metal of the tube. In the latter case it will be found that the marks produced on a filled tube with a bluntly-pointed pencil, knitting needle or similar blunt instrument, are sufficiently deep impressions to remain readable even after the tube is emptied and rolled or crumpled up. Such numbers on the tube are, of course, preferably placed near the shouldered end. Covered metal clips, capable of being numbered, may also be placed over the folded end.

The filling of individual tubes is most easily accomplished by rolling the preparation into cylindrical form with a piece of paper, slipping this into the tube, flattening the paper cylinder just beyond the portion holding the ointment and then withdrawing the paper, continuing to flatten it as it is being withdrawn, so as to force the ointment out of the paper into the tube. After one trial the operation will be found just as quick and simple as filling a jar with a spatula.

When tubes are used for such preparations such as should not come in contact with metals, the tube must, of course, be previously coated with a suitable lacquer. Collodion or an ethereal tincture of tolu, are suitable for this purpose. A little of this is poured into the tube and rotated so as to completely cover the inner surface, the surplus is then poured out and the tube allowed to dry. The operation takes only a few minutes.

Pure materials, care and cleanliness in compounding are put to naught if we choose containers incapable of properly preserving our products under the ordinary conditions to which they will be subjected after leaving our hands. This applies not only to ointments but to all preparations or products dispensed.

We should put forth constant effort to make each package leaving our prescription-department as neat, convenient and perfect as possible. We should never allow a package to go out that is incapable of keeping its contents in the desired condition, for carelessness in these things cannot help but reflect carelessness on the rest of our work.

DISCUSSION.

PROF. RAUBENHEIMER:—"Although the ointment-jar, especially the one of glass, has a strong hold on the pharmacist as well as with the public in the United States, it is only a question of time when collapsible tubes will come into general use for dispensing ointments, especially for those dispensed on prescriptions. It is my experience that their popularity among physicians is increasing. Their use is a sanitary method for dispensing ointments and they are also economical to use. What a contrast between the unsanitary earthern ointment-jar and the sanitary collapsible tube of today."

MR. NITARDY:—"To help to make the matter clearer I have brought some boxes and tubes along to illustrate my meaning. The ointment is dispensed in a colored tube and the color of the box and tube are alike. In the lid of the box we have reading-matter that tells to the doctor as well as to the patient the object of dispensing ointments this way. The label reads:—'Cleanliness and purity are of prime importance in all medicines. We have therefore, devised this package which will protect the contents from any contamination until

all is used, an end not easily accomplished when drugs of this nature are dispensed in the old style, in an unsanitary jar or box.'"

MR. JONES:—"What method do you use to fill the tubes?"

MR. NITARDY:—"It is a little hard to make that clear in a paper. Where there is many to fill it is best to use a machine. In the absence of a machine, place the ointment upon paper, roll it up small enough to slip into the tube, then pinch the paper and draw it out leaving the ointment in the tube."

MR. JONES:—"I have always used that method, but I thought there might be some better way. What do you charge for that extra service?"

MR. NITARDY:—"I cannot answer that question. I am not directly connected with the prescription-department. I have charge of the laboratory. I suggested this system to our prescription-department and I asked them to add a charge of five cents for the smaller and ten on the larger tubes. This package costs us complete for the smaller size about four and a half cents, and the larger ones about nine and a half."

MR. REYER:—"Would it not be possible to leave the paper inside the tube? It would protect the ointment from contact with the sides."

MR. NITARDY:—"It would do no harm. There would be no objection, except that the paper might be forced up and interfere with the emission of the ointment."

MR. RAUBENHEIMER:—"The older members can well remember the earthern-ware ointment jars, a very unsanitary container. From these we passed to glass, which with the aluminum tops were a great improvement. The collapsible tubes are however the real thing, more sanitary. Besides the sanitation they are really more economical, because the patient only has to take from the tube the amount only that he requires. The manner in which this is prepared by Mr. Nitardy seems to me to be rather an extravagant way however. As he puts it up I would charge fifty cents for it, whether a dram or an ounce. Do you place labels on the tubes?"

MR. NITARDY:—"It is a difficult thing to retain a label on an ointment-tube. We found that we could number the tube itself and that is what we are now doing. The box also is numbered so that the package-number and the box-number agree. We call attention to the need of always keeping the tube in its own box also by a label attached."

MR. APPLE:—"It occurs to me, that from a legal stand-point it would be advisable to label the tube. If you should be haled into court you could prove that you had taken that precaution against mistake."

MR. MAYO:—"In New York we have a law that requires the labelling of prescriptions in a certain prescribed way. It is doubtful if the courts would construe the application of a number as a compliance with the law."

MR. MYERS:—"As to the labelling of tubes or anything made of tin, I use a little banana oil, instead of tinct. of benzoin. The label then adheres very strongly to the tin."

MR. NITARDY:—"Collapsible tubes are very much the best for dispensing ointments. They are not more expensive than other containers, unless the tube is dispensed in another container."

MR. SCHULZE:—"It has been our experience that our trade, at least, prefers the screw-cap ointment-jar to the collapsible tube."

MR. FERTÉ:—"The best container for ointments is the collapsible tube. If the medicament of the ointment is one that will attack the metal of the tube it is well to fill the tube with tincture of benzoin, or some suitable lacquer, then drain them and dry."

PROF. LASCOFF:—"Collapsible tubes, in my opinion, are the best to use for the dispensing of ointments. They are cleaner than any other containers, can be readily made sterile; only a small amount of the ointment is exposed to air and thus rancidity is prevented, and when they are once emptied they are never re-filled."

MR. GRAY:—"I prefer an opalescent jar with an aluminum top. They look neater and therefore make the best impression on the patient."

Question 4:—Does the ordinary shop label, as supplied by most label-houses, give intelligent directions for use, proper and available antidotes in case of poisons and such other information as is desirable? Are abbreviations desirable? Do you consider a bottle of Spirit of Camphor, put out under a label reading "Spts. Camphor," any reflection on the pharmacist's knowledge?

DISCUSSION.

MR. APPLE:—"It is certainly advisable that "Poison Labels" should be printed in red ink and should have the antidote printed upon them, also a skull and cross-bones."

MR. GODDING:—"The State of Massachusetts requires all poison labels to be printed in red ink."

MR. NITARDY:—"I have found it very necessary to carefully observe the antidotes stated on labels by label-houses."

MR. GRAY:—"Store labels are improved by adding the dose, use and, in case of poisons, the antidote for same to the labels."

PROF. LASCOFF:—"I would suggest that the labels which are put on preparations of a poisonous nature should be carefully reviewed by pharmacists before accepting them from the printer, as one cannot be too careful in such matters. No abbreviations should be allowed on any labels. All names should be printed in full. For preparations intended for external use, it would be advisable to use a red label, on which is printed the words, 'For External Use.' For instance, Salt of Tartar is frequently confounded with Cream of Tartar, but if the former is labeled in red and marked 'For External Use' no misunderstanding will occur."

MR FERTÉ:—"To the first question I would answer 'No' and to the second one I would reply that it is unfortunate that so many of our profession do not differentiate between the singular and the plural. It would be as proper to label a bottle Tinctures Arnica, or a jar Zinc Ointments. Such ignorance is a disgrace. It is also inexcusable to write either carelessly or ignorantly of 'bromide of soda' or of 'permanganate of potash.'"

PROF. RAUBENHEIMER:—"The ordinary labels supplied by printing-houses need very careful supervision, especially as to directions for use and antidotes for poisons. Such labels as 'Rochelle Salts,' 'Spirits of Camphor,' are good illustrations as to the little care printers use in wording the labels. It is very desirable that the nomenclature of the U. S. P. and the N. F. should be used. The correct wording of a label may appear trifling, but, in my opinion it carries much weight with the intelligent public."

Question 5:—How would you advertise your prescription department?

HOW WOULD YOU ADVERTISE YOUR PRESCRIPTION DEPARTMENT?

JACOB DINER, PH. G.

Theoretically a prescription department should require no advertising. Just as all men are supposed to be equal before the Law in this greatest of all countries, but are not, just so should all pharmacists be equally qualified to properly compound prescriptions, and just so should pharmacy be a proper place and properly equipped for the compounding of prescriptions, and they are not.

While this is deplorable in one way, yet it has its advantages. For this very inequality of fitness and equipment gives an opportunity to the properly equipped pharmacist to bid for the patronage of the physician and the public, in the matter of prescription business.

Assuming then that you are educationally well-equipped, and that your laboratory and prescription-department are provided with all the paraphernalia necessary for the proper and scientific handlings of physicians' prescriptions it becomes your duty to yourself, to your physicians, and to the public to set before the last two, your reasons why they should patronize you in preference to "Tom, Dick and Harry." This can be done in a perfectly legitimate way without sacrificing one iota of your professionalism. Let us take it up *seriatim*:

Advertising to the Physician:—If your prescription-department is properly equipped and properly kept, invite the physicians of your vicinity to visit it as often as opportunity offers itself. Make it your business to let them see you and your clerks at work. Show them that the drugs and preparations entering into prescription compounds are properly analyzed and carefully standardized. Have a good reference library and put it at the disposal of the prescriber. Perfect your checking system and show your physician how you safeguard his patient's health. Make accuracy, carefulness and cleanliness, your motto and show him that that motto is being lived up to and is not merely for ornamental purposes.

Experiment! Try to improve the appearance and palatability of the pet formula of your physicians and guardedly call their attention to it. Do not attempt to teach them, but submit your improved product for their consideration and approval. Be informed on vehicles and correctives for the drugs most generally used and discuss with your physician orally and by pamphlets the advantages of certain vehicles in the administration of certain drugs.

Take an active interest in your local, state, and national pharmaceutical associations and invite your doctors occasionally to your local meetings. Never, under any consideration, allow a physician to see another's prescription, except by consent of the prescriber; and lastly, rigidly put down counter-prescribing. Briefly stated:—Know your profession and let your physicians know that you know it.

Advertising to the Public:—This is even more difficult, at first sight, than advertising to the physician, yet it is comparatively easily accomplished. You may not take the public into your back room, but you can, figuratively speaking, take your back room to the public. Have photographs of your prescription-department reproduced in neat pamphlets telling as much as possible about the arrangement, uses, etc., of the various things appearing in the picture. Show, by photograph, your method of compounding and checking, and describe in detail how it is done. Let the prescription be an advertisement for you from the moment it is brought into your store to the time the medicine reaches the patient's hands, and even beyond that.

If you must follow the trend of modern commercialism in your store, make an exception with your prescription-department. Have the receiving place for incoming prescriptions in a quiet part of the store. The anxious mother holding a prescription, on which, in her opinion, at least, depends the life of the dearly beloved child, is not greatly cheered by the light and airy persiflage floating between Alphonso at the soda-counter and Marie at the candy-stand across the aisle. Let your receiving man be a well-posted man of somewhat mature age. Twenty-one is not very tolerant with sixty-five or over, nor does twenty-one consider that beneath a ragged cloak may be as tender a heart, or even one more tender, than beats beneath the sable coat. A word of sympathy at the proper moment is worth more than all your trading stamps, souvenirs and coupons combined.

Let the receiving man be on the alert to take the prescription as soon as the customer appears with it. Time passes slowly for the bereaved heart and hope begins to be in the ascendency with the moment the work on the prescription is under way. Let no noisy conversation, or any conversation for that matter, reach the waiting customer from the prescription-department. Suspicion may arise that all of the necessary attention is not centered upon the compounding. As to the medicine itself, too much cannot be said about containers, labels, wrapping, etc. The public can judge the contents only by the package. It has been my experience that people judge, and justly so, that the man who pays attention to the details of the package is not likely to be careless about the contents. In these modern times of machinery above manual labor, one can hardly justify an illegible handwritten label on a bottle, box or jar of medicine. When a typewriting machine is obtainable for as little as ten dollars, why write by hand?

Expensive containers are not essential, neatness and cleanliness and carefulness are far more important. An expensive prescription-bottle "Adorned" with an illegible handwritten label, made still more illegible by smeary blotting and thrown into as many folds as the modern full-dress shirt, by careless pasting is certainly not a thing of joy to behold.

Lastly—do not delay delivery. It is true the medicine may not have to be taken until bedtime, and here it is only 6 p. m., nevertheless, the patient or those caring for him or her are anxiously waiting for it. It is their anchor of hope, why keep them in suspense?

Summarizing: I might say that in advertising a prescription-department, follow the rules of all good advertising. "Have something worth while to talk about and then talk about it in a manner that is worth while."

DISCUSSION.

MR. JACKMAN:—"In my opinion the most effectual way is to call upon the physicians and exploit the preparations of your own manufacture. Show them your own preparations of Milk of Magnesia, Elixir of Lactated Pepsin and other preparations in which you take pride. Such detail-work pays better than any other form of advertising."

PROF. RAUBENHEIMER:—"Many methods have been suggested for advertising the prescription-department and much money can be spent foolishly without obtaining results. After all is said, it is the physician who will recommend your pharmacy or not for the preparation of his prescriptions. It is therefore necessary to convince them of the reliability, in fact of the superiority of your prescription-department. Advertise or preach to them your pure drugs and chemicals, your reliable preparations, your facilities and ability for manufacturing, your carefulness, conscientiousness and accuracy in the compounding of prescriptions, with no substitution. Have scrupulous cleanliness not only in your prescription-department but in your entire store. Above all do not advertise your prescription-department as being 'cheap.' Cheapness and good medicine are certainly incompatible. I take especial pride in having the reputation of being 'rather expensive on medicines.'"

MR. SCHULZE:—"I think one should modestly call the attention of the public to this department in your various advertisements. In the sale even of stamps we use an envelope about three inches long and one and three-quarters wide, upon which is printed an advertisement of our prescription-department. These are much appreciated when the stamps are not to be used immediately. We, also make window-displays of sick-room requisites among which we intersperse signs calling attention to this particular department."

MR. FERTÉ:—"We advertise mainly to the physicians, sending them circular letters made to appear personal. If this does not appeal to you, write to each of them a personal letter. Your advertising should be high-class, and odd printed matter. Conventional methods do not pay."

PROF. LASCOFF:—"To advertise my prescription-department, I employ the local paper, the church-bulletins, send out circulars and have window-displays, keeping always before the mind of the public that their prescriptions will be accurately dispensed and properly checked."

MR. GRAY:—"Advertise your prescription-department only to physicians. Call their attention to the quality of the drugs you use. Good prescription service is summed up in the following specifications:—A complete outfit of all necessary utensils for dispensing; a system calculated to prevent error; a knowledge of possible deteriorations of stock so as not to dispense any article of lessened or of no value and to be as expeditious as possible consistent with safety, for no one likes to wait long for anything, particularly for medicine."

Question 6:—What constitutes good prescription service?

WHAT CONSTITUTES GOOD PRESCRIPTION-SERVICE?

FRANKLIN M. APPLE, PHAR. D.

According to the definition, given by Webster, of the word service, it means "the performance of labor for the benefit of another, or at another's command;" also "duty performed in, or appropriate to, any office or charge."

With this definition of the word service accepted as correct, we will proceed to ascertain whom we serve when occupying the position of prescriptionists.

It will be admitted, universally, that we serve our patrons, for whose support we make earnest entreaties, so as to receive as a minimum reward for our services to them, an income sufficient to meet our daily wants.

Prescriptionists also occupy the *role* of servants or assistants to the medical practitioners, who write prescriptions for their patients' welfare; and it must not be overlooked that our services are rendered, automatically, to ourselves and those dependent upon us, in accordance with the character of the labors we perform.

The question is one not only concerning service, or prescription-service, but involves the quality of the service rendered, as note the language of the query: "What constitutes *good* prescription-service?"

To render good prescription-service it has been proven by the experiences of our forefathers, that the qualifications required in the ordinary walks of life to insure success as a result from satisfactory services rendered to society, are not sufficient to qualify one to properly fill the role of prescriptionist.

The education that the average merchant needs, must be re-inforced by education along special lines, coupled with a practical knowledge of the medicinal agents one is expected to handle, acquired by close contact with the same, thereby qualifying one to judge of their purity and quality.

A course of study in a first-class school of pharmacy is an absolutely essential qualification to render good prescription-service in these days of enlightenment and progression, and those days of study must be but the beginning of a life-long term of study and research in order to keep apace with the rapid progress that is being made in medication in various forms; and also to avoid being made the victim of any unscrupulous dealer, who would send out goods of inferior quality, depending upon an ingeniously worded label to release himself from liability of prosecution.

Watch very carefully the labels affixed to goods received, is a wise plan to follow, especially in regard to such goods as are not labeled as U. S. P. or N. F. standard.

The source of supply of one's goods should be most carefully decided upon, in defense of all of the parties one serves, as *quality* should be the most important consideration in assembling one's stock of drugs and all other materials in his establishment.

Having satisfied yourself of the quality of the goods received, it is essential to protect and preserve the same in accordance with the latest knowledge upon the subject, by providing therefor suitable containers and conditions of temperature and moisture that will prevent their deterioration.

One of the most vital factors in rendering good prescription-service to the public and to medical men, is the character of the clerks employed by you.

It is an absolute impossibility for a pharmacist to render a personal service at all times and at all hours to all his patrons, unless he has a very small business and makes a slave of himself, thereby jeopardizing his health and robbing his family and himself of all social life; hence, the human factor must be taken into consideration in the management of our prescription-department and the selection of an assistant is a most important duty to perform.

To have a well-qualified proprietor associate with himself a questionably-qualified clerk is a very unwise act, and I might even say, in some cases, a gross deception, which ultimately will be detected and bring its own reward.

One of the weakest spots in our pharmacy laws is that of the rights that are vested in the semi-prepared clerks, who are granted the privileges of a Q. A., when it is coupled with the broad interpretation of these rights that prevails in some states.

The rights and privileges granted to them in this state is a shame and a disgrace to a professional calling; and you cannot find their counterpart in any other professional walk of life. The rights and privileges they enjoy are the result of bowing down to the demands of commercial considerations at the expense of professional ones.

The candidates examined in this state are now given a more severe test than was the custom some years ago; but a clearer definition of their rights, and greater limitation of the same is essential to an improved prescription-service.

These are the days when the sign "Safety-First" is met with upon all sides, and it is one of the very important reminders that prescriptionists should keep constantly before themselves and their employees, so that when one might relax his vigilance and become somewhat unmindful of his responsibilities, he will have a never failing, untiring sentinel to remind him of his obligations.

The question of safety-first involves every move made in handling the prescription from the time of its receipt until its delivery to the home or the hands of the customer.

Ofttimes the safety-first principle can be attached to the container of the compounded prescription by affixing thereto appropriate labels or stickers; also by using appropriate, distinctive containers.

By the proper use of stickers one can notify the patient what precautions are necessary to properly preserve the medicine, thereby demonstrating one's knowledge of the properties of the same, which leads to a greater degree of confidence in one's ability as a compounder of drugs and prescriptions, with its beneficial results, financially.

In the selection of containers for the results of one's prescription compounding, evidences of care and thought upon this subject can be demonstrated practically, to the decided advantage of his customers. A second-class container for a first-class product is very poor business policy.

The evidences shown in the pharmacist's prescription-department of his knowledge concerning hygiene and bacteriology, will most assuredly leave a lasting impression upon those who have access thereto; and, if one demonstrates, by the location of his prescription-department, that it is an important part of his establishment, greater respect will be shown for it by the public, which includes the medical practitioners.

What may appear to some as a minor, unimportant point, in the conduct of their prescription-departments, is the question of observing the injunctions placed upon the prescription by the creator thereof—the physician.

I have gained and held the support of several medical practitioners, by always placing the copy of the prescription upon the label when so directed. The physicians argued that, if a druggist would leave off of the label the copy, he would

be quite likely to leave out of the prescription an ingredient that he might not have convenient or not in stock.

When serving the medical men as their agents or compounders we must not forget that they are the creators of the prescription, around which they have a perfect right to throw restrictions or safeguards, in their interest, or the interest of their patients. Our commercial interests are the last ones that can receive consideration, and, automatically, ofttimes are best served by respecting fully the instructions appearing upon the prescription.

If the medical adviser wishes to control his patient or observe the results of his prescribing, that is his privilege and, at times, his duty.

Prompt attention should be given to all work and it should not be delayed one minute by anything except by a most urgent call for an emergency necessity of more vital importance than the work in hand. No customer will object to such an act if the proper explanatory remarks are offered if they are needed.

We have now reached the point where, to my mind, the professional phase of prescription-service ends, and where the commercial side of the question presents itself.

The commercial side of this question cannot be divorced from the professional side, except where no charges are made for services and materials and where no expense of delivery are to be taken into consideration; but as we are not engaged in such charity work, from force of necessity we must take into consideration the Biblical statement—"the laborer is worthy of his hire,"—and collect from those whom we serve a recompense for materials supplied and services rendered.

When adjusting the same in an equitable manner the price should consist of the total, resulting from charges for services, plus that for materials supplied. This plan is not followed by some, apparently, judging from a controversy I had recently with a customer, who asserted that she was accustomed to having a prescription, calling for five ingredients, compounded for 50 cents, and one-half of the same for 25 cents. Needless to say, we did not fill one-half the quantity for her at her price, for reasons which we fully explained to her. Such compounders show an absolute lack of ability to intelligently price prescriptions and such action also raises in my mind a question as to the ability of the proprietor to properly compound it.

The delivery of compounded prescriptions by proper help, is of more import than is usually believed by proprietors, and it receives in many cases little thought.

The way to demonstrate claims for first-class goods, a first-class store, and first-class service, is to employ first-class employees from the porter to the prescription clerk, as that these will beget confidence for the unseen services rendered to society.

Where side lines are handled in a drug-store it is policy to have the quality of the same and the services rendered at these departments of such a standard that they will not indirectly injure the reputation of the prescription-department; and it is suicidal to neglect one's prescription work to give attention to side lines.

A library of reference books, volumes of the leading drug journals, which assuredly includes the Journal of the American Pharmaceutical Association, and

an assortment of price lists should be found in every first-class pharmacy—and their pages should show the earmarks of frequent usage.

Needless to say an assortment of proper apparatus should be in stock to carry out the processes that one will be called upon to oversee, for it is surprising how easily some processes can be carried out with the proper apparatus that are difficult to complete without them.

To summarize the whole question I will state that Quality, Safety-First, Equipment and Mentality are the prime essentials in giving good prescription-service.

DISCUSSION.

PROF. RAUBENHEIMER:—"Prescriptions should be compounded carefully and conscientiously and its ingredients, as well as the doses, should be properly checked. There is one item which is too frequently sadly neglected, and that is the prompt delivery of medicines. It should be borne in mind that the patient usually waits as long as he possibly can before he consults a physician and that consequently he is in need of the medicine almost immediately. I always insist upon the prompt delivery of all medicines."

MR. SCHULZE:—"I believe good prescription service consists in being properly equipped to fill prescriptions,—first, by having the proper materials, second, by having proper apparatus, third, by having properly-qualified men and fourth by dispensing prescriptions in as neat and attractive a manner as is possible."

MR. FERTÉ:—"Good prescription service consists in dispensing the prescription correctly and knowing your profession sufficiently to know that your work is right. Use the highest class of goods and dispensing conveniences, and have neatness in your work. Lastly use speed in the preparation of medicines required."

PROF. LASCOFF:—"To have good prescription service, the following rules should be observed:—

1. Sanitation. This means absolute cleanliness in all departments of the store
2. Close attention and personal supervision by the proprietor.
3. Buying only drugs and chemicals of the best quality.
4. Courtesy and amiability to all patrons.
5. Avoidance of the 'Just as Good' habit and misrepresentation.
6. The proper standardization of drugs, chemicals and preparations therefrom.
7. Keeping the prescription department entirely separate from the store.
8. Last, and most important—A proper checking system in not alone the prescription, but all departments. In prescription work, a double system of checking is employed. Not only when the ingredients are measured or weighed, but on returning the bottles to the shelves, it is obligatory to check them once more."

Question 7:—What utensils and apparatus do you consider necessary for the prescription-department of the average pharmacy? What further equipment would be desirable?

DISCUSSION.

MR. FERTÉ:—"A druggist should have in his prescription-department, a complete assortment of metric and ordinary graduates, (not combinations), mortars of glass, wedgewood and porcelain; a scale sensitive to half a milligramme, one to weigh from one gramme to one hundred grammes; a tablet-machine, a suppository machine, (not one of the cheap cast-iron kind); spatulas of all kinds, steel, rubber and horn; an assortment of sieves, a pill-machine complete and glass slabs for ointments."

MR. SCHULZE:—"The essentials for the prescription-department are,—Three pair of scales for weighing the following maximum quantities, five grains, twenty grains and two ounces. Larger quantities to be weighed on the general dispensing scales. A full set of graduates including those of the metric system; complete sets of apothecaries and metric weights; mortars ranging from two ounces to one gallon in capacity; spatulas ranging from three to six inches and one or two putty knives; a pill-tile, roller and paddle for rolling pills; an ointment-tile; a tablet machine; an infusion-mug; a small glass stove or electric infusion-cup; a small microscope; glass stirring-rods, a suppository-mould; casserole or other dish for melting cocoa butter for suppositories, set of small evaporating dishes, small funnels for filtration; blue and red litmus paper and a Florentine flask."

MR. GRAY:—"I consider these things essential in a prescription-department:—One half-dozen mortars, a complete equipment of graduates, from sixty minims to thirty-two fluid ounces, apothecary's measure and from 5 c. c. to one litre in the metric system, an absolutely

dependable prescription scale with weights from one-half grain to two drachms and from five cg. to five grammes; a half-dozen glass funnels, graded sizes; three percolators of varying sizes; two burettes, a half-dozen Florence or Erlenmeyer flasks; a volumetric flask; two evaporating dishes; one casserole; a Bunsen-burner; three glass stirring rods; two beakers; two pipettes, twenty-five and fifty c. c.; a retort-stand; nest of test-tubes; a small file, a pill-tile, a half-dozen spatulas and a suppository-machine unless the pharmacist makes these by hand."

Prof. Lascoff:—"As I stated in an address before this section previously, a pharmacist should be in the possession of the following apparatus:—Six mortars and pestles, (porcelain); two glass mortars with pestles, three porcelain evaporating dishes; six spatulas of different sizes, of metal and two horn or bone spatulas; half a dozen glass rods; one infusion-mug; one dozen graduates from one drachm to a quart; one dozen graduates from fifty cm. to one thousand cm.; one accurate base-scale, capable of weighing one grain or less; troy and metric weights from one grain to twelve ounces and from ten milligrams to one thousand grams; two separate poison-closets; two tablet-moulds, triturate and hypodermic; two Florentine flasks, two sieves, one copper water-bath, two percolators, funnels of differing sizes, supports, etc.; a microscope if possible, a sterilizer, a centrifuge if possible; a dozen test-tubes and a burette, and two hydrometers. He should have also a special closet holding the most important U. S. P. reagents, an outfit for urinalysis and the Pharmacopœia, National Formulary and other reference books."

Question 8:—How far may a druggist go in marketing his own preparations, without usurping the rights of physicians or becoming unethical? Would there be any difference, ethically, in marketing preparations made by the druggist or those made by some coöperative organization to which he belongs? Would there be any difference from the same standpoint between preparations of such a coöperative organization and any regular patent-medicine manufacturer?

DISCUSSION.

Prof. Raubenheimer:—"I could never understand why objection should be made to a pharmacist manufacturing and marketing his own preparations, especially the simple household remedies. There is a constant demand for these by the American public and the pharmacist who does not cater to that demand loses prestige and revenue. Why should these simple household remedies that are daily called for interfere with the practice of the physician? Of course it is understood that such remedies should be entirely free from habit-forming or narcotic drugs. Above all it is the pharmacist's duty and his birthright to manufacture these medicines himself, and he should boldly state that fact of his making them upon the label. The pharmacist who himself makes these preparations will undoubtedly gain a reputation, not only in his own locality but also farther away from home."

Mr. Schulze:—"There is no difference in selling preparations, the formula of which is known to the manufacturer only. But there is a difference in marketing the official preparations put up in acceptable packages to meet the demand for household preparations. This is a demand which will continue as long as mankind suffers from coughs, colds, constipation, indigestion, etc., and believe that they are competent to treat themselves. If the pharmacist is wise he will try to induce such people to interview a physician, especially if they return for the preparation of a prescription. It is not always possible to get them to go to a physician, but if it is known that you are giving that advice, physicians will be better satisfied."

Mr. Gray:—"I think a pharmacist may properly recommend his own preparations in all cases where the customer specifies the purpose for which he wants a remedy. As long as he does not diagnose the case he is on the right side. In cases of a specific nature, he should certainly advise the patient to call upon a physician. So far as to marketing coöperative preparations, I would say that, in my opinion, there would be no difference, ethically, in marketing his own preparations or those of a coöperative company provided that one knows the materials of which they are composed."

Prof. Lascoff:—"It is positively essential for a pharmacist to put up his own preparations, and, in order to be strictly ethical, these should be some of the official preparations, such as Syrup Hypophosphites Co., Beef, Iron and Wine, a good laxative syrup and tablets, cough syrups without opiates, etc., etc. I do not believe that any physician would object to this. One of the great advantages of this practice is that your name is on the preparations and the profit is much greater."

Mr. Apple:—"In the sale of such preparations over the counter it would be inadvisable to use the official titles on the labels, otherwise the people would soon be informed as to their designations and perhaps purchase on their own initiative."

Question 9:—What do you think of tinctures made by diluting fluid extracts?

Should formulas for making tinctures in this way be given on fluid extract bottles?

DISCUSSION.

MR. OSSEWARD:—"I think we should be honest and if we use preparations made from fluidextracts we should call them diluted fluid extracts."

DR. SAYRE:—"We find among the samples collected in Kansas, that preparations made from fluid extracts do not attain the standard required."

MR. NITARDY:—"To my mind, tinctures should not be prepared from fluid extracts, but they should be always made according to the U. S. P. or N. F. The last percolate should always be tested for alkaloidal reaction after the proper amount of the menstruum is used."

PROF. LASCOFF:—"I am absolutely opposed to making tinctures by the dilution of fluid extracts. We should follow the official methods in every way. And as that manner of making tinctures is not official, no formulae should be printed on the labels of fluid extracts for the manufacture of tinctures in this way for such a practice tends to lead the profession away from the true standards and methods."

MR. GRAY:—"I think it perfectly proper to make tinctures from fluid extracts or from powdered extracts that are standardized. There is the saving in freight and in containers and it gives the pharmacist a little part in the work when he cannot afford to assay his own tinctures. It is a matter of indifference as to official tinctures whether the formula is printed on the label or not, but it might be well to print such formulas on non-official fluid extracts."

MR. SCHULZE:—"Tinctures made from fluid extracts do not have the appearance of official tinctures and their physiological effect is often different. I think, therefore, that no formulas of such character should be placed on fluid extracts. The practice of making tinctures from concentrates only proceeds from and assist to increase the laziness of pharmacists and their assistants."

MR. FERTÉ:—"If the tincture and the fluid extract are made with the same menstruum,—ginger for example,—and the fluid extract is not saturated or super-saturated with extractive matter it is proper to use the fluid extract to make a tincture; not otherwise. Couch Grass is another example. Fluid Extract of Couch Grass is simply an infusion preserved, and it is proper to make a diluted infusion from the concentrate. But this is not the case with Digitalis."

PROF. RAUBENHEIMER:—"The practice of printing formulas for making tinctures from fluid extracts should be condemned for the making of such tinctures is bad pharmacy. Fluid extracts are very frequently made by using an entirely different menstruum from that employed in making the tinctures of the same drug."

Question 10:—What are the essential qualities of a good cold cream? Of a good hand lotion? Can you offer a formula embodying these qualities?

DISCUSSION.

MR. GRAY:—"The essentials of a formula for cold cream depend upon whether you desire it to be absorbent or non-absorbent. If you desire it to be absorbed you must use a vegetable oil. But if not use mineral oil. In all cases the ingredients must be thoroughly incorporated. I present two formulas which I think will be found to produce superior products.

Absorbent Cream.

Oil of peach-kernels	8 ounces
White wax	1 ounce
Spermaceti	1 ounce
Water	2 2/3 ounces
Borax	5 grains
Oil of Rose	25 minims
Oil of Patchouli	1 minim

Mix sec. art.

Dissolve the wax in the oil, use gentle heat or preferably a water-bath. When the wax is dissolved, add the water, previously heated, and in which the borax has been dissolved, slowly, constantly stirring with an egg-beater. When cold, add the perfume oils.

"Non-absorbent, but nicer in appearance, is the product produced by using the following formula:—

Theatrical Cream

White Russian Paraffin Oil	8 ounces
Ceresin and White Wax of each	2 ounces
Water	3 and one-fourth ounces
Borax	5 grains
Oil of Rose	25 minims
Oil of Patchouli	1 minim

Proceed as in the former formula.

Any cheaper odor may be used, such as Almond, Orange Flower or Synthetic Rose.

Hand lotions should have emollient properties, be thick yet easily absorbed or dried on the hands, with a pleasing odor and appearance. Here is a formula which I have found to give great satisfaction:

Powdered Tragacanth	1½ ounces
Alcohol	16 ounces
Glycerine	8 ounces
Benzaldehyde	60 minims
Oil of Lavender flowers	20 minims

Mix thoroughly, and add quickly water enough to make one gallon."

Prof. Lascoff:—"The essential qualities of a good cold cream are to use pure ingredients, which have a pleasant odor and are bland. The following formula was given to me about fifteen years ago and I have been very successful in its use, receiving quite a demand for the product.

Cold Cream.

White Wax	12 and a half ounces
Paraffin Oil	48 ounces
Distilled Water	24 ounces
Borax	6 drachms
Oil of Rose	q. s.

"For dispensing purposes however the formula of the Pharmacopœia should be used and nothing else. For a good hand-lotion, Glycerine and Rose Water, with Tincture of Benzoin is the best. A good formula was suggested by Dr. Apple, of Philadelphia, printed in the Proceedings of the A. Ph. A."

Prof. Raubenheimer:—"The official formula for Ointment of Rose Water can be modified into a Theatrical Cold Cream by using Paraffin Oil in place of the oil of almonds. The cold cream produced by use of this process has the great advantage of keeping perfectly without change. There is consequently a large demand for such a preparation."

Mr. Ferté:—"I would ask another question in reply to this query,—Is any Cold Cream particularly good? The one that sells is good. There are so many 'good' formulas available that I think it not necessary to discuss them. 'A good all-around hand and face lotion is thin quince mucilage with a small amount of glycerin, alcohol, benzoin, menthol and some antiseptic and perfume.'"

Mr. Nitardy:—"The whole secret of the keeping quality of cold cream is in the proper balance of the ingredients of which it is prepared. A small amount of stearin is of advantage I have found."

Mr. Osseward:—"The jars in which the cold cream is placed should be warmed before they are filled, to about the same temperature as the cream, to prevent its contraction from the sides of the receptacle. If this is done this trouble will be avoided."

Prof. Raubenheimer:—"It is also absolutely necessary that the oil and the water should be of like temperature before they are incorporated."

Question 11:—What argument have you in favor of the retail druggist making his own tinctures, syrups, elixirs and other simple pharmaceuticals? Have you any arguments against this practice?

SHOULD THE RETAIL DRUGGIST MAKE HIS OWN PREPARATIONS?

HOMER C. WASHBURN, PH. C.

To what extent the retail druggist should engage in the manufacture of his own preparations, such as tinctures, syrups, elixirs and other simple pharmaceuticals, is a question that has been much discussed, *pro* and *con*, but which, I believe, is still a live and debatable one.

In considering a subject of this kind, it may be well to note the changes in economic and sociological conditions, which must be held responsible, to a large extent, for much of the business and commercial "status quo" of the present time.

Going back in the history of pharmacy, we find that the druggist, or apothecary, originally made all the preparations and medicines he supplied for the cure or

alleviation of man's ills, and that the drug- and chemical-manufacturing plants, which are such important factors in the world's business of to-day, were not only unknown and un-thought-of, but probably not needed. When we think of all this change that has come within a few generations, and note the concentration of the drug-manufacturing business within a comparatively few commercial centers, we are prone to consider pharmacy as a lost art.

However we view the subject, only a casual observation will convince us that the changed condition is not peculiar to pharmacy, but is just as true in all lines of manufacture and in most of the arts as it is in pharmacy. In short, the change is merely the progress or regress of certain evolutionary conditions that are affecting, alike, nearly all lines of human activity.

Only one-hundred years ago, and in many localities, a great deal less, each family was concerned in the production of nearly all the necessities of life. Not only were the food products grown or gathered by each family for its own needs, but even the wool and the flax that was to constitute its clothing, was raised, spun and weaved, and manufactured into garments by each family for its own use. Not only this, but if a man wanted a wagon or a sled, he made it by the toil of his own hands.

Such illustrations might be enumerated *ad infinitum*, being limited only by the number of articles of family use, but the foregoing will amply illustrate my point. Only I might have added, that most of the herbs used in the household remedies, which were so popular in those days, were also collected by the family for its own use.

But times have changed, and whether we view this kaleidoscopic, evolutionary change as of benefit or of harm, we must bow, to a certain extent, to the tendencies of the times.

To-day it is not uncommon to find our young people, and especially those among the city bred, who, while wearing the finest of raiment and traveling in conveyances that are the best product of the skilled mechanic's art, find their most serious employment in idleness and in attending places of amusement, little knowing, and caring less, where the clothes came from that they wear, or by whose toil they are permitted to enjoy the ever-changing variety of modern society

The sociologist and the psychologist have very concrete notions as to the effects of such idleness, upon the moral and spiritual tendencies of our time, and I quite agree with them, but I fully believe that it is only one phase of modern, industrial tendencies and that we should do whatever is possible to correct the evils of this tendency. However, we will be able to accomplish more real and lasting good by methods that are evolutionary and not revolutionary—by working among our own people in our own chosen profession and doing whatever we can in a quiet, but no less positive way, to encourage habits of industry and usefulness among those, who being our apprentices to-day, will be our successors to-morrow.

Personally, I do not believe that many of our modern, economic and sociologic tendencies make for the betterment of the race. Centralization of production, along each of the various lines of business, undoubtedly results in the production of articles at a lower cost, but it also results in the enforced idleness of others,

and to my mind, idleness is the most dangerous tendency of our time. I believe that this talk about the concentration and minimization of labor, in order to allow more time for intellectual and spiritual development is nonsensical. On the other hand, I do believe that hard work and even hardships, such as our forefathers had to endure, made for better intellectual and spiritual growth than the present-day, easy mode of life. In support of this contention, I would merely point to the names of Jefferson, Webster and Clay, or to Whittier, Emerson and Lowell—products all of the days when hard work and a struggle for existence was the rule. According to President Eliot's definition of education, Abraham Lincoln was the best educated man of his time, and the story of the struggles and hardships of his life are well known to all.

So, coming specifically to the point under consideration, I believe that the more a druggist plies the fundamental warp and woof of his profession, the more nearly will he deserve being called a professional man. The idea that has gained ground in later years, that the druggist is merely a store-keeper or business man is only the logical and inevitable outcome of his tendency to handle the products of other's labor, allowing the skill and the science of his predecessors to gradually slip away.

I am not advocating that the retail druggist should attempt to prepare all his preparations. Many of them would involve too large an outlay of apparatus for the amounts he would use; others that require standardization, and especially those that can only be standardized physiologically, require a degree of expert knowledge and *technique* that we can not logically expect the retail druggist to acquire, but in the average run of preparations, such as most of the tinctures, syrups, elixirs, etc., for which only a reasonable amount of expert knowledge is required, I believe that the benefit derived would justify the effort involved. And, in this connection, let me say, that the benefits gained can not all be reckoned in dollars or cents. There should be some pecuniary saving, to be sure, in such articles as are used in fairly large amounts, because the same shelf-bottle or container will serve its purpose indefinitely, while with every purchase of such article, from the manufacturer or jobber, a different bottle, label and stopper are used. Also the average retail druggist, or his clerks, could find time to make many of these preparations during moments that are not otherwise employed, and no one will contend that, in buying these preparations ready-made, we are not paying for the time, labor and expert knowledge of the individual who does manufacture them. Add to this the freight and cartage. These savings are mere trifles to be sure, but the drug business is made up of trifles, and in the aggregate they amount to considerable.

Even though the expense involved were as much as the article would cost, there are still, at least, two things to be considered—the psychological effect upon the druggist himself, and that upon the customer. The druggist who clings to at least a portion of the professional and technical phases of his calling, is benefited psychologically, at least. He takes more pride in his work, feels a greater confidence in himself and develops a higher sense of responsibility, all of which undoubtedly increase his usefulness to the community. These make him indeed a better man and a better druggist.

From the view-point of the customer, it is scarcely necessary to say that the

druggist who is known to manufacture a part of the preparations he handles, inspires confidence. The layman is usually a practical sort of an individual, and generally views the druggist as a professional, or just a plain business man, in about the ratio he deserves.

Just what preparations should be made by the retail druggist, is largely a matter of local conditions, and each individual is best qualified to answer the question for himself. But he can only do so, with any degree of intelligence, after a careful study of the matter. I would not advise any druggist who has not been in the habit of making his preparations, or one who is just starting in, to plunge into the matter blindly and attempt to make any considerable number at the start, but rather to begin gradually, increasing the number from time to time as seems best. Under such a plan, I believe an active interest will soon develop in any man deserving of the name of druggist, and that with an average degree of business acumen, it can soon be determined what preparations can be made to the best advantage.

To the list of official pharmaceuticals, I would strongly urge the manufacture of such preparations as cold creams, toilet lotions, etc. Formulæ, from which preparations of this type may be made, are easily accessible, and the confidence-inspiring influence their use gives the customer, is certainly worth while.

In the foregoing arguments, I have purposely endeavored to treat the subject academically, laying special stress on the sociological and psychological phases. Indeed, I believe that any business with the psychology of that business left out, is comparable to a boat simply drifting with the current and without the directing influence of a guiding helm.

DISCUSSION.

PROF. LASCOFF:—"If a man desires to call himself a pharmacist, he must, of necessity and desire, make all of the preparations named, to be at all worthy of that name. Not only that, but it is cheaper and his preparations are better and fresher."

MR. GRAY:—"In my opinion a druggist should make all of his elixirs, syrups, emulsions and in fact everything he uses in the way of preparations, excepting fluid extracts, tinctures, pills and tablets. With these exceptions it pays to do so."

MR. SHULZE:—"The arguments are all in favor of the druggist manufacturing his preparations. There is not one good argument against this practice. First and foremost, he knows just what they contain. Second, they are properly made and third, he can save from twenty to forty per cent. Some may consider the last item of the first importance."

MR. FERTÉ:—"It does not pay to make tinctures, because of the loss of the alcohol remaining in the marc. The same is true of fluid extracts. But it does pay to make elixirs, syrups, ointments and many other preparations. There is no argument against this practice."

PROF. RAUBENHEIMER:—"The retail druggist who aspires to the name of pharmacist, should most certainly make his pharmaceuticals. This practice should not be restricted to simple preparations, such as mentioned in the query, but he should also make the more complex preparations, those which require pharmaceutical skill, which every pharmacist should have acquired in his college course and also in his daily practice, if he has made use of the opportunities presented to him."

Question 12:—How much of the trouble encountered by pharmacists in making the official preparations is due to the use of crude materials of improper quality, and the subsequent improper keeping of the finished product?

DISCUSSION.

MR. NITARDY:—"In my opinion most of the trouble is caused by the use of improper crude materials rather than to improper keeping of the finished product."

PROF. RAUBENHEIMER:—"I think that the much talked-of poor quality of crude materials, of our drugs and chemicals is entirely unwarranted. The pharmacist who is willing to pay

the price for them can always obtain drugs which are of U. S. P. quality. Another important factor in the situation is that the average pharmacist seldom examines or tests the drugs he buys. As soon as he commences to do so and the wholesale druggist becomes acquainted with the fact, then the pharmacist, upon the payment of a fair price will be supplied with drugs and chemicals of U. S. P. quality."

Mr. Ferté:—"Not much of the trouble is due to drugs of poor quality. It is caused in the majority of cases by ignorance of the *modus operandi*, I believe."

Prof. Lascoff:—"In the manufacture of official preparations it must be understood that the materials must be of A-1 quality, and if the preparation is not a stable one, it should not be made in large quantities, and should be preserved in well-corked amber bottles and at a medium temperature. If care is not taken in the preservation of such preparations, there is always trouble."

Question 13:—Did you find it necessary to have your Pharmacopœia re-bound before it was subjected to much wear? Is the binding as substantial as it should be or does it compare favorably with the bindings of other books intended for constant use?

DISCUSSION.

Prof. Lascoff:—"This question was brought up at a meeting recently held in the New York College of Pharmacy and Professor Remington stated that the binding of the U. S. P. (IX) would be far superior to any other binding of the previous volumes. My personal experience is that I have had mine re-bound twice, and then had to buy a new book with a flexible cover."

Mr. Schulze:—"I think the binding of the Pharmacopœia compared favorably with that of other books, although we used it a great deal more."

Mr. Ferté:—"We have not been obliged to have our Pharmacopœia re-bound, probably because I covered it with heavy wrapping-paper as soon as I received it. At practically no cost this covering will last two or three years and then can be renewed."

Prof. Raubenheimer:—"Unlucky '13 and unlucky binding of the Pharmacopœia were united. After the short use of one year, the poor binding of our good Pharmacopœia gave way and its leaves were scattered in the many corners of my store. An interleaved and leather-bound copy was then procured at the advanced price, but its fate was the same. Of course, I admit that I make frequent daily use of the volume and could hardly expect that one copy should last ten years. But its binding can be, and undoubtedly will be, greatly improved upon. By the way, the United State Pharmacopœia is not the only one which has a poor binding. The French Codex is bound equally bad if not worse."

Dr. Wilbert:—"I am informed that the Board of Trustees has made proper arrangements for a most substantial binding for the new Pharmacopœia."

Mr. White:—"The practice of making notes in the Pharmacopœia is not a good one. It increases the use of the volume and therefore tends to its deterioration. I use a card-index for such purposes. These cards can be renewed at any time at but very little expense, and their use saves the use of the Pharmacopœia."

Question 14:—Has the average pharmacist such reference books as he should have? Would $50.00 or $100.00, expended on books of value to pharmacists be a paying investment from a commercial stand-point? What books would you include in a five-foot shelf of reference books for the country pharmacist; for the city pharmacist?

DISCUSSION.

Mr. Schulze:—"Every pharmacist should possess a Pharmacopœia and a National Formulary. In addition to these, he should have at hand a first-class treatise on pharmacy, and also one on chemistry. He should subscribe to at least one good drug-journal. All of these will not cost $50.00 and they will answer all practical purposes. These books, with the publications which the membership in the A. Ph. A. will bring him to keep in touch with the advance of pharmacy, are sufficient for the ordinary pharmacist."

Mr. Ferté:—"The average pharmacist is not equipped with books as he should be. There is no need of expending more than fifty dollars for a working-library. That much, however, I consider a good investment for him."

Mr. Gray:—"I do not think the average pharmacist has as many reference books as he should have; and believe that fifty dollars for books is a good paying investment. I would recommend the following books for a five-foot library shelf: U. S. Pharmacopœia, U. S.

Dispensatory, Materia Medica and Pharmacology (Culbreth), National Formulary, Manual in Chemistry (Luff and Candy), Squire's Companion to the British Pharmacopœia, Latin Dictionary, Chemical Dictionary, Merck's Index.

PROF. RAUBENHEIMER:—"I have thoroughly investigated this question, being somewhat of a 'book-worm' myself. The conclusion I have reached is that the average library of the average pharmacist of the United States is a disgrace to the profession. Is it not sad that, even in the Empire State of New York, which pretends to be a leader in things pharmaceutical, a provision had to be made in the Pharmacy Law requiring every pharmacist to have in his pharmacy copies of the Pharmacopœia and the National Formulary? The pharmacist who invests fifty or one hundred dollars in books pertaining to pharmacy, chemistry, botany, pharmacognosy and toxicology will receive an abundant return within a very short time. I have had in mind the preparation of a list of books which should be possessed by every pharmacist, both in city and in country and hope soon to furnish such a list as is called for by the query."

PROF. LASCOFF:—"Very few pharmacists have a complete library, or even the most necessary books of reference. In my opinion, fifty dollars to one hundred dollars expended on books of value to pharmacists would be a paying investment from a commercial standpoint, as without books of reference I do not think any reputable pharmacist could get along. I would suggest the following list of books as desirable for a library. For city pharmacist: U. S. Pharmacopœia; National Formulary; U. S. Dispensatory; Hager (3 volumes); Squire's Companion to British Pharmacopœia; Text Books, (Arny's, Remington's, Caspari's); Volumetric Analysis (Coblentz & Vorisek or Schimpf); Latin Grammar; Incompatibilities in Prescriptions (Ruddiman); Weights and Measures; Outlines of Physiology; Botany and Pharmacognosy (Kraemer); Polyglotta (Rosseau); Proceedings of A. Ph. A.; Manuals of Toxicology and Microscopy; Journal American Chemical Society; Purdy's Practical Uranalysis; Journal Am. Ass. Advancement of Science; Five Pharmaceutical Journals (to be bound); Pharmacology and Therapeutics (Cushny); Materia Medica (Rusby). For country pharmacists: U. S. Pharmacopœia; National Formulary; U. S. Dispensatory; Hager (3 volumes); Incompatibilities in Prescriptions (Ruddiman); Proceedings of A. Ph. A.; Two Pharmaceutical Journals (to be bound.)"

DR. WILBERT:—"The Pharmacopœia was not much in evidence in New York State before its possession was made compulsory. Some two years ago I took it upon myself to make an investigation into this matter. I found some pharmacopœias, but they were not like those of which Mr. Jones and Prof. Raubenheimer have spoken. Those I found were in a most excellent state of preservation and they had a thick layer of dust on top of them."

MR. OSSEWARD:—"It seems strange to me that any pharmacist can get along without a pharmacopœia. We have constant use not only for the pharmacopœia of this country but also for those of Britain, France, Germany, Holland and Scandinavia." In addition to the books mentioned I would suggest one entitled "Modern Materia Medica."

MR. NITARDY:—"I have found a book entitled 'Elementary Chemistry,' by Dr. Gordeen, a very good book for a retail pharmacist to have."

PROF. RAUBENHEIMER:—"The most thorough book of which I have knowledge is Von Schmidt's Pharmaceutical Chemistry. It is printed in German and, so far as I know it has not been translated. The author of the book is an honorary member of our association."

Mr. Richardson read the following paper in reply to this query:—

DRUG-STORE LIBRARIES.

FRANK RICHARDSON, PH. G.

The average pharmacist has not the reference-books that he should have. The average drug-store library in this section is composed of the books required by the law, viz.: The United States Pharmacopœia, The National Formulary, and one of the Dispensatories, and the pharmacist without a good working-library, is like a mechanic trying to work without suitable tools.

The pharmacist in most rural communities, is looked upon as a man able to answer all sorts of questions and nothing he can do will add more to his prestige than his willingness and ability to answer satisfactorily the many questions asked by his customers, and to do this he must have the tools to work with.

In my own store I have several times the five feet mentioned in the question submitted.

I would recommend for the country pharmacist the following:—

The United States Pharmacopœia, The United States Dispensatory, Remington's Practice of Pharmacy, The Scientific American Cyclopedia of Formulas, Simon's Manual of Chemistry, Diseases of Cattle, (Department Agriculture), Scoville's Art of Compounding, Homeopathic Pharmacopœia, Gould's Medical Dictionary, The National Formulary, The National Dispensatory, The Era Formulary, Manual of Toxicology, (Brundage), Culbreth's Materia Medica, Diseases of Horses, (Department of Agriculture), Ruddiman's Incompatibles, Schimpf's Volumetric Analysis, The Modern Materia Medica.

Add to these the Legislative Manual published by the State, for reference in regard to political questions that are often referred to the pharmacist, and the World Almanac in answering general questions.

In addition to the above books every pharmacist should take an active interest in and be affiliated with his State Association, and lend his support to their efforts for the betterment of pharmacy and also the American Pharmaceutical Association and have its valuable Year Book at hand for ready reference. Last, but not least, every pharmacist who desires to keep abreast of the times, should be a subscriber and careful reader of one or more of the splendid journals devoted to pharmacy.

This list, of course, could be largely extended, but I believe that with such a library, the pharmacist would be well equipped to meet any emergency and would find the money expended in procuring it well invested.

For the city store much the same list would apply, with the exception of the books on Diseases of Horses and Cattle.

Question 15:—Do pharmacists as a rule select the right kind of boys for apprentices, considering that they are the timber from which the pharmacy of to-morrow will be built?

PHARMACISTS AND THE RIGHT KIND OF APPRENTICES.

ROBERT P. FISCHELIS, B. S., PHAR. D.

The query, "Do pharmacists as a rule select the right kind of boys for apprentices, considering that they are the timber from which pharmacy of to-morrow will be built?" requires the consideration of several existing conditions before it can be answered intelligently.

First of all, what is the modern conception of the word "apprentice," as applied to pharmacy? Is an apprentice a boy whose environment necessitates the earning of money outside of school hours, in order that he may obtain a common grammar-school education, and who finds that the corner drug-store can use him during the hours he does not spend at school, both day and night? Is an apprentice a high-school student who earns his "pin" money, or more, by afternoon or evening work in a drug-store? Or, is an apprentice a high-school graduate who selects pharmacy as his life work as other high-school graduates select medicine, law, architecture, or finance?

The grammar-school boy, first mentioned, as a rule does not get very far along in the practice of pharmacy. He is selected, not to be taught the profession, but because his labor is cheap and he is able to run errands, clean up, and relieve the proprietor and other help, of various unpleasant but necessary duties. Unless this boy is very energetic and becomes very much interested in pharmacy as a life work, because of an inherent liking of the profession as he sees it practiced, he only continues the work as long as it is a means to his particular end, earning money. Perhaps this boy may be fortunate enough to be in the employ of a druggist who realizes that it is his duty to sacrifice a small part of his time for the purpose of awakening an interest for pharmacy in this prospective, by showing and explaining to him that there is more to our profession than the mere selling of wares over the counter. But the chances of affiliation with such a "preceptor" are becoming rarer every day.

The non-graduate high-school student before mentioned, is more apt to become a druggist than either of the other two. Pharmacy usually appeals to him as a commercial proposition. He knows that it will be necessary to do some studying or perhaps take a college course before he can qualify for the work, but considers the time thus spent, a good investment. He has had one or more years of high-schooling and that will admit him to most colleges of pharmacy. The standing which a pharmacist enjoys in most communities, and the commercial prospects are the things that appeal to him and even though his natural inclinations may be toward another line of work, the higher requirements and the longer "apprenticeship" place it beyond his reach and pharmacy becomes his choice.

To be sure, many of this class, as well as of the other class named, really develop a liking for the profession of pharmacy and practice the profession for its own sake as well as for the living it earns them. But there is a difference between inherent love and acquired affection.

We come now to the high-school graduate, who through some one of several influences has acquired so great a liking for pharmacy, that he decides to make it his life work. Such young men are very desirable apprentices, but in comparison with other fields of endeavor, what prospects does pharmacy hold out to them?

The president of a state pharmaceutical association said in his address at the 1914 convention of that association, "we have become commercialized to a certain extent, and the majority of us do not have any prescription business worthy of mention."

The author of a book on commercial pharmacy makes these statements:—

"For permanent success in present-day pharmacy, you should be a good business man rather than a good prescription man.

"The biggest successes in pharmacy are the big stores in the large cities and their success is due to their knowledge and practice of business methods. They have set aside their professional scruples, and have added side line after side line, until their stores look more like department stores than pharmacies.

These statements voice the trend of pharmacy unmistakably and leave with us a fair idea of the future.

Experience is proving that few of the men who choose pharmacy because they like it, stick to the practice in retail drug-stores. The majority, finding that they

are unable to use their knowledge of the subject in the retail drug business, without at the same time doing the non-pharmaceutical work required in a modern drug-store, turn to manufacturing chemical or pharmaceutical houses, or take further courses in chemistry, bacteriology, materia medica and like subjects and thus qualify for good positions as analysts, teachers or laboratory workers.

It is my belief that there are just as many young men to-day who seek to become "professional pharmacists," as there ever were, but the commercial trend of retail pharmacy has made that business undesirable for them and they are turning in large numbers to positions with manufacturing houses, who are gradually picking up the professional side of our calling which the retailer is casting aside.

The author, whom I have already quoted, says that it pays a progressive druggist to hire a clerk at about $20 per week to take care of his prescription department, while he himself makes the side lines "go." How much time is such a man going to take to help educate apprentices and make pharmacy the profession, a worth-while calling for young men?

But perhaps the solution of the problem is nearer a consummation than appearances indicate. If those proprietors who are commercially inclined employ helpers who incline toward professionalism, and those who are professionally inclined, on the other hand, employ commercially-trained help, both ends of the business should be well taken care of and the apprentice, seeing both ends of the work of a drug-store properly taken care of is at liberty to choose between the two, when the time comes for him to assert himself. However, personal attention is necessary in either case to make the apprentice at all valuable.

That a division of drug-stores into pharmacies and shops is being given some serious consideration, is evidenced by the fact that a state pharmaceutical association at its last meeting, appointed a committee of eleven men to consider the subject and report at the next meeting. Such a condition would naturally solve the apprentice problem.

To my mind the apprentices in pharmacy to-day are not getting a fair deal from the majority of employers. Some consideration should be taken of a man's inherent abilities and preceptors should be frank in telling a boy whether or not he is fitted for the work. A frank statement of the opportunities in present-day pharmacy should also be given to the apprentice before he has gone too far into the work to be able to turn to something else more suitable for him. I would say that pharmacists as a rule do not give enough time and thought to the selection of apprentices and forget that an apprentice is an investment and that this investment, more so than any other in the store, will bring a high or low rate of interest, depending upon the amount of time the employer is willing to devote to its development.

DISCUSSION.

Prof. Lascoff:—"Pharmacists as a rule do not select the right kind of boys for apprentices, they choose them with regard to salary and do not take into consideration their general education and other things so essential to the development of a pharmacist. In my opinion a pharmacist should be a high-school graduate before he studies Pharmacy. That is the case in European countries."

Prof. Raubenheimer:—"To my great regret I am compelled to answer this query in the negative. It seems as if the apprenticeship which was so greatly valued by our fathers in Pharmacy is neglected, sadly neglected. It should be remembered above all, that besides the

necessary preliminary education, the apprentice must possess something which is still more important and that is a love for professional pharmacy. In order to create and foster such love I have found that the study of the History of Pharmacy supplies this want and have instituted such a course in the College of Pharmacy at Jersey City."

MR. FERTÉ:—"As a rule pharmacists make no selection whatever. They hire the boy whom they can drive the hardest for the least pay. No attention is paid to 'timber.'"

MR. SCHULZE:—"No deliberate selection is usually made. A boy of the lawful age is taken into the store and allowed to make his way to the sale of soda, cigars. He then gradually adds to these the sale of seidlitz powders, patent medicines and package goods. In a few years this boy with an immature mind is encouraged to take the examination for the Assistant's certificate. After a few years he takes the examination for a Pharmacist. Passing this, he with his incomplete education becomes a full-fledged pharmacist. No boy from the fifth and sixth grade or even from the seventh grade of our public schools can properly comprehend the mysteries of pharmacy and chemistry and the sooner we insist that our apprentices shall be high-school graduates the better standing will pharmacy attain in the eyes of the public."

MR. JONES:—"My experience is that a person should be careful in their selection of an apprentice if they expect to get service which is valuable. But the more enterprising and energetic young man you get, the quicker he leaves you for some larger field."

MR. NITARDY:—"If we will select an apprentice when we really want an apprentice, and hire an errand-boy when we want one, we may be able to help this problem a little. There is no use in hiring an apprentice when you merely want a bottle-washer or a window-cleaner."

MR. JONES:—"I claim that a man will not make a good proprietor unless he learns the business from the ground up."

MR. NITARDY:—"I mean that we should not hire an apprentice unless we intend to move them up. If there is no such intention we should simply hire an errand-boy or porter."

Question 16:—What plan would you suggest to make our profession more attractive to the better class of young men?

PROF. LASCOFF:—"To make our profession more attractive to the better class of young men, I would suggest that we conduct our pharmacies upon a professional basis. The pharmacists should do away with side-lines which do not belong to the profession, and if you do keep side-lines, keep your prescription-department distinct and separate from your store. Do not devote all the space in the front to side-lines, but give room for a display of crude drugs, etc. This will attract the young men more than a display of shoe-laces or parasols, which articles displayed in your store would certainly not attract any one to its study."

DR. WILBERT:—"We could probably make the business more attractive by doing a strictly professional business, a pharmacy business, and by making others do the same business. Then those who do not belong in the business will get out and leave it much to its good. If this could be accomplished the business of Pharmacy would be much more attractive to the better class of men."

MR. OSSEWARD:—"I heartily agree with Dr. Wilbert. If the pharmacists would do their duty and see also that others did theirs, the trade would benefit. When I was on a State Board we received a great many complaints from men about the way their brother pharmacists conducted their businesses, but if we asked the complainants to testify to the truth of their statements the answer would be, 'O, please don't use my name in it.' Now, the druggists should take their part of the responsibility."

MR. JONES:—"I do not agree with Dr. Lascoff in making the business more professional or in separating the pharmacy from the side-lines. Combining these more closely is to my mind the better way."

PROF. RAUBENHEIMER:—"Besides the shorter hours and more pay which are proposed I would point out the position the druggist occupies in the community as a reason to attract young men to the profession. As a profession Pharmacy is certainly the equal of Medicine as a guardian of the health and the welfare of the people. Pharmacists may well become physiological chemists and thereby rise to high positions everywhere. In considering the question of a choice of a profession with my son I had no difficulty in convincing him that Pharmacy was the most desirable profession for him to adopt for his life-work."

MR. SCHULZE:—"I think we should insist on having it understood that Pharmacy is of dual nature, that is, professional and commercial, and that there is nothing degrading in commerce, unless a man himself degrades it by dealing in immoral or illegal goods. Then we should lessen the hours of confinement, by opening our stores a little later and closing them a little earlier at night, giving more time to clerks, at least two evenings a week, with a part of each Sunday. Have them realize that Pharmacy, after all, requires no more from its followers than other professions and not as close application as Medicine, nor is it as unpleasant in many ways.

Mr. Osseward read Dr. Groat's paper on "The Chemistry of Cold Creams."

THE CHEMISTRY OF COLD CREAMS.

H. S. GROAT.

There has always been a noticeable difference between cold creams made with, and those made without, borax. Those made with borax are always whiter and fluffier, and seemingly not as greasy as the others, due to the uniting of the borax chemically with the palmate, stearate, or fatty alcohol of the hard and soft bases. This reaction only takes place when the oil solutions and the aqueous solution of borax are both heated to above 120 degrees F., as the esters or organic borates are not formed below that temperature.

When spermaceti is used as the base in the manufacture of the cold cream, borax unites chemically with cetin its chief constituent in a reaction similar to the reaction of borax and glycerin in the manufacture of boroglycerin. In a similar manner borax reacts with myricylic palmate and ricinolein, the chief constituents of white wax and castor oil respectively, when either white wax or castor oil is used as the principal base. With almond oil as a base borax acts likewise with the three main constituents of almond oil, palmitin-myricyl palmitate, olein-glyceride of oleic acid, and stearin-glyceride of stearic acid.

When glycerine and borax are heated together, the chemical result is boroglycerin, sodium meta borate and boric acid, or meta boric acid and water.

$C_3H_5(OH)_3 + Na_2B_4O_7 = (C_3H_5)BO_3 + 2NaBO_2 + H_3BO_3$

Glycerine Borax Boroglycerin Sodium metaborate Boric acid or

$(H_2O + HBO_2)$

Water Metaboric acid.

Take the following common formula for cold cream:

Petrolatum Liquidum	120
Cera Alba	40
Aqua	40
Sod. Bibor	1.4

Here we have white wax as the hard base, its chief constituent myricyl palmate, being attacked by the borax forming palmitic borate.

$3C_{16}H_{31}O.OC_{30}H_{61} + Na_2B_4O_7 + 3H_2O = (C_{16}H_{31})_3BO_3 + 2NaBO_2 +$

Myricylic Palmate Borax Water Palmitic borate Sodium metaborate

$3HO.OC_{30}H_{61} + H_3BO_3$ or $(H_2O\ HBO_2)$

Myricylic acid Boric acid or water and Metaboric acid.

Another common formula is:—

Oleum Ricini	180
Cetaceum	60
Cera Alba	15
Sodium Biborate	1.5
Oleum Rosæ.	
Oleum Amygdalæ Amaræ aa q. s.	

In this case the borax enters into three separate chemical reactions with the white wax, spermaceti, and castor oil respectively. We have given above the

reaction of borax with white wax, we shall now take up the reaction of borax with spermaceti. The chief constituent of spermaceti is cetin-cetyl palmitate—$3C_{16}H_{33}O.OC_{16}H_{31}$—which is attacked by the borax forming palmitic borate, as in the case of white wax and cetylic acid as a by-product instead of the myricylic acid, which is the by-product when white wax is used.

$3C_{16}H_{33}O.OC_{16}H_{31} + Na_2B_4O_7 + 3H_2O = (C_{16}H_{31})_3BO_3 + 2NaBO_2 +$

Cetyl palmitate Borax Water Palmitic Borate Sodium Metaborate

$3HO.OC_{16}H_{33} + H_3BO_3 — (H_2O + HBO_2)$

Cetylic Acid Boric Acid or Water and Metaboric Acid.

With the castor oil, borax combines with its chief constituent ricinolin-glycerine of ricinoleic acid, and forms glyceryl borate or boroglycerin, ricinoleic acid, sodium metaborate, and boric acid or water and metaboric acid.

$C_3H_5(C_{18}H_{33}O_3)_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + 2NaBO_3 +$

Ricinolein Borax Water Boroglycerin Sodium metaborate

$3HOOC_{18}H_{33}O + H_3BO_3 — (H_2O + HBO_2)$

Ricinoleic Acid and Boric Acid or Water and metaboric acid.

There is another and more popular class of cold creams, of which almond oil is the base. The extreme popularity of these creams is due to the fact that the use of almond oil as the base is a decided advantage, as it is of a purely endermatic nature, that characteristic so greatly desired in this class of toilet preparations. Of the many formulæ of this class tried out the following gives the most universal satisfaction:—

Oleum Amygdalæ Dulcis	77
Lanum	15
Paraffinum	18
Cera Alba	18
Sod. Bibor	1.5
Liq. Hydrog. Diox	1.5
Oleum Rosæ Geranium	.2
Aqua Dist	27
Oleum Rosæ	.4

With the almond oil the borax enters into a triple chemical reaction with its chief constituents, the glycerides olein, palmitin, and stearin. Glyceryl borate or boroglycerin is the resulting chemical compound formed in each case. With olein, which is a glyceride of oleic acid, the reaction is

$C_3H_5(O.OC_{18}H_{33})_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + 3HO.OCC_{17}H_{33}$

Olein Borax Water Boroglycerin Oleic acid

$+ 2NaBO_2 + H_3BO_3 \qquad (H_2O + HBO_2)$

Sodium metaborate and boric acid or Water and metaboric acid.

With palmitin the reaction is

$C_3H_5(O.OC_{16}H_{31})_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + HO.OCC_{15}H_{31} +$

Palmitin Borax Water Boroglycerin Palmitic acid

$2NaBO_2 + H_3BO_3 \qquad = (H_2O + HBO_2)$

Sodium metaborate and boric acid or Water and metaboric acid.

With stearin the reaction is

$C_3H_5(O.OC.C_{17}H_{35})_3 + Na_2B_4O_7 + 3H_2O = (C_3H_5)BO_3 + 3HO.OCC_{17}H_{35} +$
Stearin Borax Water Boroglycerin Stearic acid
$2NaBO_2 + H_3BO_3 - (H_2O + HBO_2)$
Sodium metaborate and boric acid or Water and metaboric acid.

Mr. Ford read the following paper:—

RANDOM NOTES.

THOMAS D. MCELHENIE, PH. G.

Aqua Anethi:—Wishing to replenish a supply of Aqua Anethi I could find no formula except the British on Page 174, U. S. Disp., 19th Ed.—directing distillation. Not having the necessary apparatus or time, I adapted to the case the official process for most of the aromatic waters, as follows:—

℞	Ol. Carui	2 cc.
	Ol. Anethi Sem	2 cc.
	Talcum	30 gm.
	Water ad	2000 cc.

Triturate and filter as usual.

The product is entirely satisfactory.

Blue Pills.—For several years my habit has been to dispense for Blue Pills over the counter five-grain Capsules of Powdered Blue Mass, and the patient gets a better thing than ready-made pills whether made by myself or a factory.

(Capsulæ Blaudii C. Arsenici et Strychnia):—The official process for the Pill of Ferrous Carbonate and the processes of the various makers who furnish the pills ready-made, do not and cannot produce a pill of *ferrous* carbonate. By the time the work is done the moisture present has changed nearly or quite all of the salt to the *ferric* salt. Pondering these things, I hit on the plan of using the essential ingredients dried, and packing speedily into capsules.

Starting with a warm mortar of good size, drop in the necessary dispensary tablets, for one grain each Arsenious Acid and Strychnia Sulphate and follow with Potass. Carb. Purif. Recentis 250 grains. Rub to fine powder and add Ferri Sulph. Exsicc. 250 grains in fine powder. Rub lightly enough to mix well and pack into No. 4 Capsules, which will hold five grains. Keep in corked bottles. These will produce *Nascent ferrous Carbonate* in the stomach at the time of disintegration. I have some of the capsules several months old unchanged.

Preparation of Herbs, etc.:—To prepare leaves or herbs for maceration or percolation moisten the material with water in a suitable basin and cover, allowing to stand over night so that the leaf is in about the natural fresh condition. Then when the worshipful mistress of Domestic Lodge No. 1 is not looking, borrow her meat chopper, sneak back to the store and in a little while you have your leaves coarsely cut. Allow them to dry and proceed with the operation.

I have prepared Jaborandi and Henna in this way and for many others it would work equally well. Our distinguished member, Mr. Ebert, years ago proposed the same little tool for granulating Opium.

Elix. Aromaticum:—Four years of continuous use of the formula of Mr. R. R.

Johnston of Bucyrus, Ohio, for this elixir only confirms my good opinion. It contains 6¼% Alcohol, and that is enough for any use I can think of. The formula was published in the Pharm. Era, May 20, 1909, P. 469. As it was not mentioned in the Report on Progress of Pharmacy for 1909 or 1910. I conclude some members may have missed it, and therefore will transcribe it here.

℞ Sp. Aurantii Co	12.	cc.
Talcum Purif	30.	gm.

Triturate thoroughly and add in portions

Syrup	363	cc.

Add gradually in same manner

Glycerine	93.7	cc.
Alcohol	62.5	"
Water	468.7	"

Filter through wetted filter and follow with mixture of

Alcohol	10%	} by vol.
Glycerine	15%	
Water	75%	

to make 1000 cc.

After two or three trials I have found it to be improved by using about 20% of Concent. Syr. Orange in place of so much Simple Syrup.

Worked out for five gallons it runs as follows:—

Sp. Aurantii Co	240 cc.	240 cc.
Talcum	600 gm.	600 grams
Syr. Orange Conc	51 fl. oz.	1452 cc.
Syrup	195 " "	5808 cc.
Glycerine	64 " "	1875 cc.
Alcohol	42 " "	1250 cc.
Water ad. Cong. V		qs. ad. 20,000 cc.

Lin. Camphora Benzoata:—To an educated nose a sniff at the mouth of a bottle of a perfectly normal academic and official liniment of Camphor brings to one's mind just a trace of an odor which resembles the first cousin of rancidity. I have had in mind for a long time to try benzoin for that and having occasion recently to make up 2000 cc., I added 2% of Siam Benzoin.

Following the suggestion made by Mr. Raubenheimer a few years ago I used Oleum Sesami weighing 1600 grams into a tared bottle, and dropping in 400 grams of coarsely powdered Camphor and indicating by a strip label the measure of 2000 grams, then adding 40 grams coarsely powdered Siam Benzoin and allowing to stand until wanted, when it was filtered, and furnished a fine product. Camphor dissolving more rapidly than in Ol. Gossypii.

Mr. Nitardy moved that the papers presented by authors not present be declared as read and referred for publication. Motion carried.

Mr. Osseward was then installed as Chairman of the Section and made the following address:—

"I will say to you gentlemen that I deem it an honor to be selected as Chairman, as I told one of the gentlemen who asked me about this nomination, that I had my mind made up

when I came to Detroit that I would not accept an office of any kind. He wanted to know why, and I said because I have so much business in my own State that I do not see how I can do justice to the work. I think the members of the Association should be a little more lenient with the Chairman, as it is hard work to get papers as it means a lot of worry, and if the worry was taken away it would be a pleasure. I am going to try to see if I cannot get a little assistance from the start so that a little worry can be taken off my mind, and if that can be done I think the work will be pleasure instead of a pressure, because the Chairman has to work very hard. I put out 200 invitations for papers and received three replies. I trust that some of the members will make promise of a paper. I will do everything I can to make this Section a success next year.

Mr. Osseward then introduced Mr. Becker as Secretary.

Mr. Becker spoke as follows:

I feel that a few words in defense of my position is necessary. I came here also with the intention of not taking an official connection with any of the Section. The principal reason for my not wanting to serve, was because I feel that my services are very inadequate because of the very poor results obtained from my efforts. I do not conduct successfully the section of work assigned to me. In regard to papers, I think that one plea is sufficient for a gentleman. I will try to do the best I can as Secretary.

Mr. Osseward then introduced Mr. Jones as Associate.

MR. JONES:—I do not know that I can be of any service to the officers of this Section, and I do not know what you intend that I should do, but I do consider it an honor to be appointed as Associate to such worthy gentlemen as Mr. Osseward and Mr. Becker.

MR. NITARDY:—The Associate is the apprentice and the object is that he will become acquainted with every part of the work so that when he becomes Secretary he will make an energetic, hard-working Secretary and later when he becomes Chairman, he will make a hard-working and energetic Chairman.

MR. WILBERT:—I move a hearty vote of thanks to ex-Chairman Nitardy.

Motion approved by rising vote.

Motion to adjourn. Carried.

C. OSSEWARD, Secretary.

ON THE PREPARATION OF FLAKE AGAR-AGAR.

F. W. NITARDY, PH. C.

Agar-agar has recently come into favor with the medical profession as an evacuant. Its value is based on the formation of a soft, bulky indigestible jelly in the intestines, which, it is claimed, promotes peristalsis by supplying the necessary residue frequently lacking on account of our present-day highly refined foods, and softens the feces by virtue of its water absorbing and holding power.

In its natural form agar-agar is hardly available for this purpose as the long shreds are difficult to administer. The powdered agar-agar, it is claimed, will be digested when taken. Its most desirable form for administration is therefor in flakes, in appearance quite similar to flake breakfast foods and usually prescribed to be eaten with or as such cereals.

A simple and easy method of preparation is as follows:

Soak and rinse a suitable quantity of agar-agar in water, drain well, grind through a meat-chopper and spread out in thin layers on cheese-cloth trays to dry in a dust-free airy place. When dry collect and store in suitable vessels. This product is usually prescribed in doses of one to four heaping teaspoonfuls (1 to 4 gm.).

If it is desired to medicate the agar-agar, the required amount of medicament for each 500 gm. is dissolved in water so as to form 1000 cc. of solution. This solution is mixed with the flake agar-agar and as soon as it is evenly and completely absorbed, the product is again spread out to dry.

SHORT AND SIMPLE ALCOHOLIC ASSAY METHODS.

JAMES SEYMOUR AND GEORGE MCDERMAND, M. S.

As Professor Havenhill reported so favorably his adoption and success with the "salting out" assay for alcohol, in examining Spirit of Camphor, we extended the same method to estimate alcohol in other alcoholic liquids, including vinous and spirituous liquors. We checked the results by other known alcoholic assay methods and the results seem fairly accurate. The method is quite simple and rapid, only a few minutes usually being required, and no complicated apparatus, a small cylinder graduate (or better, a slender graduated tube), being sufficient. This renders the method useful and practicable for the pharmacist.

The method consists of adding dry potassium carbonate to the sample, (5 cc. or 10 cc.) in a graduate until a little of the solid salt remains undissolved after a minute with shaking. After settling, the oily layer of alcohol is measured and read in percentages. If we have a 10 cc. sample, each cc. of alcohol reads as 10 per cent. etc.

When beer, wine or other solutions containing sugar or viscous substances is tested, it should stand a few hours, as some of the water is suspended with the alcohol and must settle out. The presence of water is shown by the layer of alcohol becoming milky when first separated.

As we have but begun the work we have but few samples to report. Two samples of beer when thus tested:—

No. 1 beer showed	8%
2 beer showed	10%
1 good whiskey showed	50%
1 bar whiskey showed	42%
1 gin showed	43%
1 wine showed	32%

These checked with known accurate assays by other methods except No. 1 beer. Ten cc. samples were taken in the above tests.

For the estimation in Spirit of Camphor, we would refer to the proceedings of the A. Ph. A. of 1907, pp. 443 and 444.

ASSAY OF TINCTURE OF IODINE.

Test to see if the solvent is official alcohol by adding a little potassium carbonate to a small portion (5 cc.) and shaking. If a lower stratum of water solution is formed it shows a deficiency of alcoholic strength. U. S. P. alcohol gives no lower liquid.

DETERMINATION OF IODINE AND ALCOHOL.

A 5 cc. sample titrated with a little less than 28 cc. of decinormal sodium thiosulphate should be decolored, (by following U. S. P. directions). This colorless solution can now be saturated with potassium carbonate to liberate the alcohol, which rises as an oily layer to the top. The percentage should show between 92 and 94% alcohol. Even with this small sample the error may be too small to vitiate the results, even with the dilution from the decinormal thiosulphate. A more concentrated solution, however, may be used if preferred.

We do not claim anything novel in this method of assay, but wish to call attention to its simplicity, accuracy and rapidity.

ARTIFICIAL PERFUMES.

H. S. GROAT.

The tendency of the present day on the part of both, the large perfume manufacturers and pharmacists who make their own perfumes, is decidedly toward the manufacture and perfection of artificial goods. The constant increase in price and consequent unreliability in quality of essential oils, has been a main factor for this change, augmented by the rapid advancement of the science of organic chemistry.

Since the active principle of many drugs is now made synthetically almost the entire world's supply of these now comes from the chemical laboratory. The active odoriferous principles of many, if not most, of the essential oils have been isolated and their identity with synthetic organic compounds firmly established. In fact, so extensively has this field been developed that now one can obtain commercially and at much lower figures, the odoriferous principle of almost every known essential oil; consequently perfumes made from these synthetic compounds are much cheaper than the natural perfumes, and in many of the cases are the equal, if not the superior, of the natural product itself.

"Artificial Perfumes" is a very exhaustive and complex subject and so closely allied with advanced organic chemistry that in this brief treatise, I can mention in a limited way only the more important of these synthetic bodies of which the artificial perfumes of the present day are merely mixtures.

VANILLIN.—Vanillin is identical with the active ingredient or chief constituent of vanilla, and is extensively used in enhancing natural extracts as well as the chief flavoring agent of artificial vanilla flavorings. Vanillin is methyl protocatechuic aldehyde—$C_6H_3(CO\,H)\ (OCH_3)_3\ (OH)_4$. It occurs in white needles and melts at 81° C. It has an intensive vanilla odor and is used extensively in confectionery, as well as in perfumery.

COUMARIN.—Coumarin is the active principle of the Tonka Bean, and is used extensively as a substitute for it in the manufacture of flavoring extracts. It is a white crystalline solid, melting at 67° C. Coumarin is the delta lactone of coumarinic acid—$C_9H_6O_2$. It is used considerably in perfume manufacture as a fixative for other odors, and is the most important synthetic compound of this class. It is the chief ingredient of *Foin Coupe,* or New Mown Hay Bouquet.

HELIOTROPIN.—Heliotropin is a synthetic compound possessing a powerful Heliotrope odor. It is a white, crystalline compound, melting at 37° C. Heliotropin is the methylene ether of Protocatechuic aldehyde—$C_6H_3(CHO)\ (O_2)\ (CH_2O_4)$. An alcoholic solution of it makes a very fine Heliotrope perfume, which can be improved by a little vanillin or coumarin for a fixative and intensifier, blended with a little bergamot, lemon or neroli oils.

AUBEPINE OR HAWTHORNE.—The concentrated odor of Hawthorne or May blossoms is represented by anisic aldehyde—$C_6H_4(OCH_3)\ (CHO)_4$. When properly diluted this makes a very pleasant perfume, which is greatly augmented by blending with a small quantity of citrus oil—orange or petitgrain.

IONONE.—Ionone is the concentrated violet odor. In the concentrated form it does not in the least resemble violets, but does when greatly diluted. The commercial product is only a 10% alcoholic solution, because of its great intensity of odor. Ten cubic centimeters of this extract when diluted with pure spirits are sufficient to produce a thousand cubic centimeters of triple extract of violets. The perfume is enhanced by the addition of a little orris oil, which acts chiefly as a fixative. The chemical formula of "Ionone" is kept a trade secret, but it is evident that the several commercial brands now on the market vary chemically; according to Tiemann, they vary from alpha, beta and gamma Irone—$C_{13}H_{20}O$—to the beta, oxime and alpha ketones of same.

ARTIFICIAL MUSK.—For many years attempts have been made to artificially imitate the odor of musk. Not however, upon the basis of any knowledge of the constitution of the natural perfume. The chemistry of natural musk—the preputial secretion of the musk deer, *Moschus Moschiferus,* is entirely unknown. The artificial musk of modern perfumery is tri-nitro-butyl toluene—a white, crystalline solid, melting at 96° C. The entire commercial supply has been manufactured under the patents of Albert Bauer until recently, when a rival manufacturing chemist successfully marketed a di-nitro-butyl xylene as an artificial musk. The odoriferous constituent of the musk does not appear until the nitrated hydrocarbon radical has been introduced into the compound. The use of musk is extensive for perfumery of a certain kind, where powerful odors are desired. It is used very extensively in the scenting of toilet soaps, the presence of alkali improving its odor as well as acting as a fixative.

ARTIFICIAL NEROLI.—At present there are two artificial neroli substances on the market: one a solid, sold under the name of "Nerolin," the other a liquid called "synthetic Neroli oil." "Nerolin" is beta napthol Methyl ether, a white crystalline compound, melting at 70° C., first introduced into commerce under the name of "Bromelia." Synthetic neroli oil is a mixture of the alcohol geraniol—$C_{10}H_{16}O$—and linolol—$C_{10}H_{18}O$—together with their acetic esters. The characteristic odor, according to Erdmann, is due to the presence of the Methyl ester of anthranillic acid. The artificial neroli oils of commerce are uneven in value, and as their exact composition is a trade secret, the only road open to the practical perfumer is to imitate the natural oil by experimental mixtures of the compounds named.

ARTIFICIAL LILAC.—Terpineol—$C_{10}H_{15}OH$—in dilute form possesses an odor almost identical to that of natural lilacs, though also suggesting elder flowers and hyacinth. Terpineol is the basis of many floral perfumes of this class. A mixture of 90% terpineol and 10% palmarose oil, yielding perfume indistinguishable from the favorite French perfume, *Muguet.* (The term *Muguet* is merely a French equivalent of Lily of the Valley.) In general, lilac extracts, or "white lilac," may be regarded as solutions of terpineol, which are slightly modified by the addition of other perfumes, generally oils of ylang ylang, geranium, sandalwood or rose, according to taste. For perfuming soaps a straight solution of 1% terpineol does very well.

ARTIFICIAL HYACINTH.—Several of the artificial oils of Hyacinth are on the market which are fairly good imitations of the natural perfume, chief among

them being chlorstyrolene and alpha bromstyrolene. Styryl alcohol—$C_9H_{10}O$—also known as cinnamyl alcohol, has a powerful odor of hyacinths, while benzyl alcohol—$C_6H_5CH_2OH$—is an aromatic body of strong hyacinth and bitter almond odor.

ARTIFICIAL LEMON OIL.—There are on the market several preparations which bear the label synthetic oil of lemon, (terpenless), and which possess a strong lemon odor. Analysis by Parry and other authorities shows that citral is the chief compound of these preparations. Citral in a diluted state has been strongly recommended as a substitute for lemon oil by the Schimmel Company, who in one of their late annual reports says, "Normal lemon oil contains, on the average, about 7½% of citral. Therefore, 75 grammes of citral would suffice as a substitute for one kilogramme of oil of lemon. As its flavor is somewhat wanting in the degree of freshness characteristic of good lemon oil, this deficiency must be neutralized by an addition of lemon oil." Therefore, citral is now generally used in combination with oil of lemon. The most approved proportion is 100 grammes of citral to 1400 grammes of oil of lemon. This is equivalent in odoriferous strength to three kilogrammes of oil of lemon. We quote farther: "Fifteen grammes of the mixture are sufficient for making one hectoliter of lemon liquor, and this remains clear, even if it contains only 30% alcohol. For making lemon syrup to be used for lemonades, 20 to 25 grammes are sufficient for 100 kilogrammes of syrup. When the use of citral is preferred without the addition of oil of lemon, the following solution deserves the preference: 75 grammes of citral and 925 grammes of alcohol (95%). This equals one kilogramme of oil of lemon in odoriferous power.

ARTIFICIAL ROSE OIL.—Although numerous "artificial" and "synthetic" rose oils are listed by various firms, there is nothing which in any way competes with the fine odor of natural otto of roses. The two best defined constituents of oil of rose are the alcohols geraniol—$C_{10}H_{17}OH$—and citronenellol—$C_{10}H_{20}O$—and these bodies with a trace of their acetic esters will produce as good an "artificial oil of roses" as may be made. A little genuine oil of roses is frequently added to make the substitute a little more passable. A compound patented by Schering, termed di-methyl-heptadinol—$C_9H_{16}O$—which possesses strong rose odor, has met with commercial success.

NIOBE OIL.—The synthetic perfume sold under this name is merely a methyl benzoate—$C_6H_5COOCH_3$—. It is a liquid having the specific gravity of 1.102, and a boiling point of 195° C.

BERGAMOIL.—This body, which is used as a substitute for bergamot oil, and which it resembles very closely, is simply linalyl acetate—$C_{10}H_{17}$ $C_2H_3O_2$.

ARTIFICIAL JASMINE OIL.—The natural jasmine perfume is due to an essential oil, but this is both exceedingly delicate and expensive. The odoriferous principle of jasmine is generally extracted in the form of a pomade. There, however, are several brands of synthetic oil of jasmine on the market, their chemical composition varying greatly. None of them are single compounds, but are mixtures of several odoriferous bodies, which together reproduce very fairly the jasmine perfume.

According to Verley (owner of the French patents for jasmine oil) a mixture

of 10% linalol and 90% phenyl-glyco-methylene-acetal makes an admirable artificial product, as these two chemical compounds are the chief constituents of the natural oil. Other authorities, Hesse and Mueler, deny the existence of phenyl-glyco-methylene-acetal in jasmine oil, or that they even give a jasmine odor. Their conclusion lead us to infer that a fine artificial product results, from a mixture of benzyl acetate, 65% ; linalyl acetate 7 to 10% ; benzyl alcohol, 6% ; linalol 16%. We infer from Parry's experiments that secondary styrolyl acetate—C_6H_5. $CH(O.COCH_3)$ CH_3—is in itself a good product. Artificial jasmine oil is made on the basis of these researches, although probably small quantities of some bodies not generally known are added by the manufacturers.

ARTIFICIAL COGNAC OIL.—Cognac oil, which is not an essential oil in the fullest sense, is prepared by distilling wine lees with seven or eight times its weight of water. Commercial "oenanthic ether" serves its purpose fully and is a product of more reliable quality than the genuine oil. It is not used so much in the manufacture of artificial perfumes as in the manufacture of brandies, chiefly for flavoring poor qualities of brandies made from corn.

Any intelligent perfumer can produce most all of the natural perfumes from the synthetic bodies of which we have spoken briefly or otherwise. Very finished products can be perfected by the proper and cautious use of the more common aromatic alcohols and esters for correctives, intensifiers and fixatives.

DETERIORATION OF GALENICALS.

E. KIMMICH, PH. G.

Many of the U. S. P. and N. F. galenical preparations deteriorate after storage for periods varying from a few weeks to several years, and this change in constitution is due to the action of light, changes in temperature, oxygen of the air, the action of living organisms, and the spontaneous breakdown which must take place sooner or later. These changes sometimes alter the physical properties of a preparation to such an extent that it seems like a different product.

Every pharmacist has had his troubles with liquid preparations containing Iron Phosphate and Pyrophosphate; he knows that when such products, (mainly elixirs) are freshly made they are usually of a light amber or pale greenish color; but on aging some turn to a darker green or brown, depending on the solvents or adjuvants used, such as the alkaline citrates, ammonium chloride or acetate, and sodium chloride.

When exposed to light for a much longer period, decomposition and precipitation takes place. While these changes are largely brought about by the action of light and temperature, the solvents and menstrua used have a great deal to do with hastening the process.

Some years ago I made several series of experiments in an effort to determine the principal cause of such changes. These experiments, consisted mostly of the group containing Iron Phosphate Sol., Iron Pyrophosphate Sol., and Tincture

Citrochloride of Iron in combination with Quinine salts, and in menstrua containing varying percentages of alcohol, glycerin, sugar and water, also with added solvents, to aid in the solution of the iron and quinine salts, such as Sodium Citrate, Potassium Citrate, Ammonium Acetate, Ammonium Chloride, and Sodium Chloride.

On exposure to diffused light for several months, and direct sunlight later, I was also able to make the following general deductions:—

(1) Citro-chloride of Iron withstood the effects of light better than the Phosphate and Pyrophosphate of Iron.

(2) The less sugar the product contained the slower the darkening in color.

(3) The varying percentages of alcohol did not seem to have much influence in the matter of discoloration.

(4) Those having Ammonium Chloride or Ammonium Acetate present darkened more quickly than those containing Potassium and Sodium Citrates and Chlorides.

(5) The presence of glycerin retards discoloration and decomposition.

(6) Prolonged exposure to direct sunlight decomposes the mixtures, probably with the formation of insoluble Ferrous Phosphate and Quinine Citrate, which is only slightly soluble.

(7) Storage in amber bottles is almost a necessity, as the changes take place very slowly if light is excluded.

When the light has decomposed the mixtures, in corked bottles, pressure is developed, due to the formation of CO_2.

Samples tested at the time for fermentation showed the liquids to be sterile, indicating that bacteria played no part in producing the changes.

In conclusion I would state that elixirs, in which a soluble green iron compound is wanted, will keep better if made with citrochloride of iron, particularly if part of the sugar is replaced with glycerin and the liquid is stored in amber bottles.

Beef, Iron and Wine, N. F. is another product that will sometimes give trouble, especially if put up in flint bottles and exposed to direct sunlight in a display window. The action of the light causes decomposition, forms a gas and possibly blows the cork. As this product contains ingredients that are liable to ferment, one naturally supposes that the product has spoiled from this cause; the real cause, however, is the action of actinic sun rays on the citrochloride of iron present. Ferric Salts in the presence of citric acid are reduced by action of sunlight, and the citric acid is decomposed, liberating CO_2.

In making this statement I do not mean to say that Beef, Iron and Wine does not ferment under certain conditions, but that we have the same factor present to cause decomposition that we have in the iron elixirs.

Most pharmacists have observed the darkening in color and change in taste of syrups containing chemicals held in solution by the aid of acids, also syrups containing acids only. In such compounds we can always look for those changes, and the more acid present the more pronounced the color and the more rapidly will the changes take place.

Syrup Hydriodic Acid is a fair illustration. The present U. S. P. syrup contains less sugar than the 1890 formula, and consequently is more stable. Samples that had stood for over ten years, made with varying amounts of sugar, glycerin and water showed the discoloration to be in direct proportion to the amount of

sugar present. One sample made with 60% glycerin and no sugar remained practically unchanged. In none of the samples was the darkening due to free iodine.

Syrup of Iron Iodide is another product requiring the greatest care in manufacturing to prevent darkening at the beginning. If the operator is fortunate enough to make the syrup without its being tinted through exposure or contamination in the process of manufacture, he will find that the syrup soon begins to discolor on aging, even if kept in flint bottles and in the light.

There is enough Hypophosphorous Acid added for the purpose of preventing discoloring to act on the sugar present and develop colored decomposition products.

Liberation of Iodine causes the least of the discoloration in Syrup Iron Iodide. It is oxidation of the Ferrous into Ferric Iron, and the formation of invert sugar and caramel from the action of the acid on the sugar.

Syrups containing Hypophosphites are another class that darken, and the trouble can usually be traced to the mineral acids present. It is a well known fact that the Hypophosphite Syrups form an excellent medium for the growth of fungus. They should be sterilized where practicable. This will retard the development of fungus growth for a long time, especially if the containers are unopened.

Cod Liver Oil Emulsions darken quite rapidly, unless properly handled. Cod Liver Oil is one of the most easily decomposed fats we have, and exposure to air for even a short time darkens the product and makes a decided change in the odor. All Cod Liver Oil Emulsions act practically the same in these respects, regardless of the emulsifying agents used. The only practical way to prevent or retard discoloration is to bottle the emulsions as soon as made in pint bottles or less so that it will be consumed by the patient before it has time to change in color, odor and taste.

Medicated Bougies and Suppositories with a gelatin base undergo changes which result in hardening of the mass and decrease in solubility. The best and most practicable method is to encase them in proper shaped metal collapsible tubes. In this way the mass is protected and remains soluble indefinitely.

DISCUSSION.

CHAIRMAN NITARDY:—I think this paper a very valuable one. It treats of a question that has not received sufficient attention among druggists.

MR. RAUBENHEIMER:—I think the subject of this paper one most interesting to every pharmacist. Preparations containing ferric salts should not be exposed to light. They should be kept in amber-colored bottles. The Formulary is very specific about that. On the other hand, ferrous salts ought to be exposed to light. Bear that distinction well in mind. The less sugar there is in these ferric preparations the longer they will keep. They should not contain any sugar. The next official formula for Elixir of Iron, Quinine and Strychnin will not contain any sugar. It will contain glycerin and mostly water. The same applies to syrup hydriodic acid. The more glycerin this preparation contains the longer it will keep. I have some in my store that I made about twenty-seven years ago and it is still white. I think it a fallacy to add hypophosphorus acid to syrup of ferrous iodid. All that is necessary with that,—and I believe that is the old German method,—is to put the syrup in a flint-glass bottle, a pint, quart or gallon bottle, and if you have much use for it put it into a five-gallon demijohn and keep it exposed to light. Drop into it an ordinary iron nail. This will much assist in its preservation.

A FORMULA FOR A NEW TYPE OF A SALINE ANTISEPTIC SOLUTION.*

CHARLES H. LA WALL, PH. M.

The number of formulas for antiseptic solutions is legion and the types into which they naturally divide themselves are numerous. They may be acid in reaction and contain about 20 per cent. of alcohol, like the official Liquor Antisepticus, or they may be of the alkaline type and contain glycerin, like the Liquor Antisepticus Alkalinus of the N. F.

For both of these types new formulas have been proposed by me and there is a third type, recently coming into prominence and attaining quite a degree of popularity, for which I would like to propose a formula also. This is a type which is slightly saline and distinctively alkaline, but which contains no glycerin and no appreciable amount of alcohol. The formula is as follows:

Sodium chloride	5	gm.
Sodium borate	5	gm.
Sodium bicarbonate	10	gm.
Oil of spearmint	1	cc.
Oil of eucalyptus	0.5	cc.
Menthol	0.1	gm.
Alcohol	5	cc.
Fluidextract of hydrastis (aqueous)	2	cc.
Water, q. s. to make	1000	cc.

Dissolve the salts in 750 cc. of water. Dissolve the oils and menthol in the alcohol. Mix the alcoholic solution of the oils with 5 gm. of magnesium carbonate and triturate gradually with the aqueous solution of the salts. Filter and add the fluidextract of hydrastis and finally add enough water through the filter to make 1000 cc.

This solution makes an excellent wash for the mouth or nose, either full strength or diluted with water, as preference indicates.

DISCUSSION.

CHAIRMAN NITARDY:—"I will ask Mr. Hall to discuss this paper."

MR. HALL:—"I regret I have not the sample which I prepared here, to show you. It is a very easy preparation to make and results in a brilliantly clear article, without a trace of opalescence. It is a delightfully fragrant preparation and taken in the mouth, either clear or diluted it makes a very pleasant mouth-wash. Of course the presence of five grams of salt in a thousand c.c. leaves just a little saline taste, that is about half of a normal salt solution. Then the golden-seal gives the preparation just a tinge of color, a very pale lemon-color, but as you see it in a pint or a quart bottle it is a preparation that is very attractive to the eye. It leaves a very pleasant taste in the mouth with that touch of salinity which makes it very palatable. Being flavored with spearmint it is very agreeable to taste."

MR. NITARDY:—"Mr. Hall's description gives us a very clear idea of the preparation, even though he has not brought the sample with him."

MR. GREY:—"I would suggest that Berberine might be used instead of aqueous hydrastis. I understand it is used in the preparation called 'Murine.'"

MR. HALL:—"It is but a small amount that is in the preparation, perhaps it is there simply for the color. There is not enough for any medicinal effect, except upon the sensitive nerves there."

* Read before Section Practical Pharmacy and Dispensing at Detroit Meeting.

PAYING MORE THAN WAGES.

E. BERGER.

The final action in selling—the contact between clerk and customer—involves the most troublesome problem in retail merchandising. All the knowledge and skill, money and energy which have gone into the assembling and arrangement of stocks, into window display, advertising and the countless details of store service count for nothing unless the sales-person sums these up and expresses them in courteous, intelligent and interested service to the buyer.

How to make sure of that interest and applied intelligence—how to get the clerk to look at each customer and try to treat each customer as the proprietor himself would, is the crowning task in retailing.

Every means that has been utilized to arouse interest, to awaken desire, to impel action, be it advertising, window display, store environment, or any of the many other factors, are all for one purpose—to bring the customer face to face with the clerk. But if that clerk is not in hearty accord with the store and its interests, if that clerk is indifferent to the store's success, what is the probable result? Approximately forty per cent. of possible sales are lost and at least fifteen per cent. of the sales that are culminated never have a "comeback," that is, the customer is not so impressed or gratified by the treatment and service received that he or she goes back to the store to buy a second time or a whole series of second times.

One way of solving the problem—according to the judgment and experience of hundreds of successful merchants—is profit-sharing.

Profit-sharing with employees not only seems to have solved this problem, but has been found to be triple-actioned in its accomplishments. In addition to its primary purpose and success in affiliating employees with a store, profit-sharing has been demonstrated to be a very influential advertising factor and of equal merit in inducing patronage.

The profit-sharing system can be divided into three classes, those who share profits based on individual sales, on department sales and on the general sales of the entire store. No doubt the largest results are obtained by the latter, however, it is doubtful that the average druggist could be induced to go into it to this extent in the beginning. Cooperation among druggists is so successful and the several National Cooperative Druggist enterprises, namely: The United Drug Company (Rexall), The American Druggists' Syndicate, and Tampa-Cuba Cigar Company,—have grown so extensively that very few progressive druggists are without the fold of at least one of these beneficial enterprises, some "live wires" have all three of these agencies, and it is on the goods manufactured and sold by these enterprises in which the druggist is financially interested and on which he himself "*shares profits*" that he has been successful in sharing profits with his clerks,—the percentage paid clerks on these department sales ranges from 2½ to 5%, on entire store sales usually 1%. This dividend is paid on cash sales only.

I am convinced by the results that I have been shown and have personally observed that profit-sharing is the quickest, the most economical, the surest and most effective method of converting the indifferent, thoughtless employee to a keenly interested, active co-partner in the business.

A NEW ANTIDOTE FOR CORROSIVE SUBLIMATE POISONING.

WILLIAM A. HALL, PH. B.

With the publicity attending a fatal case of corrosive sublimate poisoning of a Southern banker a few months ago and as usually obtains, following the detailed description of such events in the daily press, a marked increase in the use of that poison for suicidal purposes, the thought must have occurred to many, how best to divert the public attention from this poison and what is an effective antidote.

It is not for us to discuss the *surgical* methods used in a few cases *after* the poison has entered the circulation, but what can be done at the outset in the way of mechanical relief by means of the stomach pump and emesis, the administration of albumen and mucilages or oils to retard the absorption in the stomach and intestines.

These general points will all occur to the good practitioner but he wants something else on which he can rely as an antidote. Studying over these matters, about a year ago, an idea came to me that by using one of the general alkaloidal reagents in reverse manner, we could solve the problem.

Obviously whatever was tried, should be safe in itself, and not make a bad matter worse, and also the employment of medicines beneficial in themselves, even if they failed in attaining the special object desired.

With such limitations I settled on the well-known *Mayers' Reagent* which as you all know, is a solution of *Mercuric Potassium Iodide* a general precipitant of the alkaloids. Selecting *Quinine* as the alkaloid to harness, I considered if we could administer the requisite potassium iodide and quinine in solution, after emptying the stomach, we could fill out *Mayers'* formula and the result would be (Mercuric Chloride—Potassium Iodide—Quinine Salt) insoluble in the acid gastric juice, and, as will be shown later, insoluble in the dilute alkaline intestinal liquids as certainly as we can tell from bottle reactions. While all my work was done in *Grammes*, the results, excepting Mayers' formula itself are given in *Grains*—the more popular term.

Mayers' reagent N1—20 is

Mercuric Chloride	6.775 grammes
Potassium Iodide	25.000 grammes
Distilled water to make 1 Litre.	

(You will notice the $HgCl_2$ to KI is about 1 to 3.75)

1 cc. Mayers' reagent N1—20 =.006775 Mercuric Chloride, .025 Potassium Iodide, and precipitates (approx) .0056 Quinine, gravimetric factor for alkaloid (average, *Lyons*) .311.

It is stated by authorities (U. S. D.) that Mayers' solution is HgI_2+2KI but on the basis of his proportions it would seem to be HgI_2+4KI.

$$\overset{271}{HgCl_2}+6\overset{996}{KI}=HgI_2+2KCl+4KI$$

271 : 996. :: 6.775 : X=24.9
6.775 : 25. :: 2 : X= 7.38
6.775 : 24.9 :: 2 : X= 7.35

and the formula seems to provide a slight excess of potassium iodide

$$HgCl_2+4KI=HgI_2+2KI+2KCl$$
$$+ \qquad +$$
$$HgI_2+2KI+QCl\text{-}2aq=HgI_2\text{-}KI\text{-}QI+KCl$$

corresponding to

MODIFIED MAYERS'.

Mercuric Chloride 2. grains
Potass. Iodide 4.9 grains
Quin. Muriat 4. grains (2.91)

Slower in precipitating the quinine, than Mayers' which in *grains* would call for

MAYER.

Mercuric Chloride 2. grains
Potass. Iodide 7.5 grains
Quin. Muriat 4. grains (2.91)

The filtrates in both cases were free from mercury (H_2S or K_2S). The *modified* Mayer filtrate showed very *slight* test for iodine (HNO_3+chloroform). Filtrate from *Mayer* tested a little stronger but still slight.

In both equations however, there is no appreciable solvent action of the potassium iodide in solution on the precipitate which in Mayers' was 6.64 grains

Modified Mayers' 4.00 grains.

Choosing quinine hydrochlorate because of its solubility, the following formula was constructed:

Mercuric Chloride 2 grains
Dissolved in H_2O 2 ounces
Potassium Iodide 7.5 grains
Quinine hydrochlorate (large excess) 20 grains
Hydrochloric acid 10% 55 minims
Dissolved in H_2O 4 ounces

Mix the two solutions which you observe contain acid to make the whole 2/10 of 1% and filter after two hours on a tared filter. Wash and dry to constant weight on the water bath.

Weight dried precipitate 6.64 grains
Duplicate 6.625 grains

To determine if a small excess of potassium iodide in presence of quinine muriate has an appreciable solvent action on the precipitate trial was made using

Mercuric Chloride 1 grain
Potassium Iodide 7.5 grain
Quinine Muriate 4 grain

Net weight of precipitate dried on water bath to constant weight

.210 gramme=3.24 grains

which is practically the same proportion and answers the question in the negative.

Filtrate evaporated to dryness in tared dish on water bath 16.4 grains. Using

the gravimetric factor .311 (Lyons) for the *Alkaloid* and calculating the salt from that, the p. p. 6.64 grains=originally 2.54 Qcl.

Residue from filtrate		16.4 grains
Deduct KCl (1 mol.)	.553 grains	
Deduct KI (excess)	.15 grains	.703 grains
		15.697 grains
Add water of crystallization.		1.57 grains

20.—17.267=2.733 grains

Two grains Mercuric Chloride then in acid solution was precipitated as an in-
+
soluble mass by (2.54 grs. QHCl+7.5 grs.) Potass. Iodide in aqueous solution.

Calculated from residue of filtrate.....2.733 grs.
Theoretically from above formula.....2.91 grs.

Gm. .200 of the alkaloidal precipitate was rubbed up with 250 cc. 2/10 of 1% Na_2CO_3 solution, shaken vigorously at frequent intervals for several hours, filtered and residue on tared filter evaporated to dryness on water bath.

Weight of residue Gm. .180

showing the maximum solvent action of the dilute alkali to have been 20 m. g. or less than 1/3 grain. As some of the Mercuric Antiseptic tablets on the market contain 1/3 of citric acid the action of that acid was considered, in presence of mercuric chloride on albumen solutions and also on the antidote described in this paper.

With the *antidote* no hindrance, but rather a more complete precipitation was noted.

With *albumen* solutions the following reactions were observed:

SOLUTION OF ALBUMEN is precipitated by $HgCl_2$ but this is prevented if an appreciable amount of citric acid is previously added to the mercury solution.

Mercuric Chloride+HCl (1%) is precipitated by albumen, insoluble in excess of HCl and practically insoluble in citric acid (large excess.)

Mercuric Chloride+Citric Acid is *not* precipitated by *albumen* except in rather large excess, but on further addition of dilute HCl (1%) a copious precipitate occurs. In case you have added a large excess of albumen there is no mercuric salt in the filtrate (H_2S.)

ALBUMEN (in excess) acidulated with 1% HCl remains clear; but on further addition of 1% Mercuric Chloride solution a heavy precipitate falls. The filtrate shows a faint yellow coloration with H_2S but no p. p. even on standing.

MERCURIC CHLORIDE (1%)+H Cl (1%)=No p. p. On further addition of albumen a heavy precipitate unchanged by adding H Cl in excess.

MERCURIC CHLORIDE+ALBUMEN in excess a light precipitate partially soluble *at first* in H Cl but precipitating again shortly.

MERCURIC CHLORIDE +CITRIC ACID is not precipitated at first, but by adding ALBUMEN in large excess a precipitate falls and on further addition of H Cl a copious precipitate falls. No *mercury* in filtrate.

To sum up:—Remove the stomach contents as thoroughly as possible, give plenty white of eggs and remove in the best way, wash out the stomach thoroughly,

then for every two (2) grains of Mercuric Chloride supposed to have been taken, administer the following:

Potassium Iodide	7.35 grains
Quinine Hydrochlorate	4. grains
Dissolved in water	4 ounces

For 10 grains Mercuric Chloride:

Potassium Iodide	36.75 grains
Quinine Hydrochlorate	20.00 grains
Distilled Water	4 ounces
Hydrochloric Acid (10%)	m. 45

It forms a precipitate with the Mercuric Chloride, insoluble in dilute acids or alkali carbonates (.2%). While investigating these reactions I found another equation using 4.9 grains potassium iodide would work, but the precipitation is not so rapid or complete, nor does the precipitate separate as quickly, *an important point.*

A solution could be kept on hand ready for use of the formula above, with the addition of H Cl to make it 2/10 of 1%.

The study and analyses of the subject are somewhat intricate and perplexing, especially as to the composition of the precipitate with Mayers' reagent but the results for our purpose seem clear, well defined and simple. The well known chemicals, Quinine Muriate and Potassium Iodide are obtainable at any good drug store and with the proportions given, good results may be expected in accordance with my tests. A notable *excess* of the *iodide* is to be *avoided*, an excess of quinine does no harm but the proportions given should be followed.

It is to be hoped that these suggestions of the writer will be tried physiologically, and medical men use the results given in this paper to help solve a serious problem.

PYORRHŒA CURED BY EMETINE.

It is stated that an amœba has been found in the mouth lesions of subjects suffering from pyorrhœa; Barrett and Smith, of Philadelphia, consider this to be the cause of the disease. The local application of emetine hydrochloride solution is stated to have successfully cured the disease. Bass and Johns, of New Orleans, have confirmed the presence of this amœboid organism in cases of pyorrhœa, which is named *Entamœba buccalis.* They also find that emetine hydrochloride has a valuable curative action, and prescribe it in the form of hypodermic injections into the arm, in half-grain doses, at first once daily for three successive days, then every fourth day, finally every seventh day, until the gums have healed and the teeth again become firm. Local application of the solution should be made simultaneously.—*Nat. Druggg.*, 1914, 44, 522.

General Session

REPORT OF THE COMMITTEE ON POST OFFICE REGULATIONS FOR THE MAILING OF POISONS.

The appointment of this committee is due to a decision rendered in the United States District Court for the District of Missouri to the effect that the Post Office regulation prohibiting the mailing of poisons or poisonous medicines to others than licensed physicians, surgeons and pharmacists was illegal in that it restricted postal privileges to particular classes of individuals.

The present postal law, which was passed March 4, 1909, deals with the subject of poisons, inflammable materials, dangerous articles, intoxicating liquors, etc., in Section 472, as follows:—

Section 472. All kinds of poisons, and all articles and compositions containing poison, and all poisonous animals, insects, and reptiles, and explosives of all kinds, and inflammable materials and infernal machines, and mechanical, chemical or other devices or compositions which may ignite or explode, and all disease germs or scabs, and all other natural or artificial articles, compositions or materials of whatever kind which may kill, or in anywise hurt, harm or injure another, or damage, deface, or otherwise injure the mails or other property, whether sealed as first-class matter or not, are hereby declared to be non-mailable matter, and shall not be conveyed in the mails or delivered from any post office, or station thereof, nor by any letter carriers; but the Postmaster General may permit the transmission in the mails, under such rules and regulations as he shall prescribe as to preparation and packing, of any articles hereinbefore described which are not outwardly or of their own force dangerous or injurious to life, health, or property: Provided, That all spirituous, vinous, malted, fermented, or other intoxicating liquors of any kind are hereby declared to be non-mailable and shall not be deposited in or carried through the mails. Whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the directions thereon, or at any place at which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be non-mailable, unless in accordance with the rules and regulations hereby authorized to be prescribed by the Postmaster General, shall be fined not more than one thousand dollars, or imprisoned not more than two years, or both; and whoever shall knowingly deposit or cause to be deposited for mailing or delivery, or shall knowingly cause to be delivered by mail according to the direction thereon, or at any place to which it is directed to be delivered by the person to whom it is addressed, anything declared by this section to be non-mailable, whether transmitted in accordance with the rules and regulations authorized to be prescribed by the Postmaster General or not, with the design, intent, or purpose to kill, or in anywise hurt, harm, or injure another, or damage, deface, or otherwise injure the mails or other property, shall be fined not more than five thousand dollars, or imprisoned not more than ten years, or both.

In elucidation of this law the following regulation was promulgated by the Postmaster General:—

4. Medicines composed in part or wholly of poison or poisons, and anesthetic agents, which are not outwardly or of their own force dangerous or injurious to

life, health, or property, and not in themselves unmailable (see Sections 480 and 497), may be admitted to the mails for transmission in the domestic mails from the manufacturer thereof or dealer therein to licensed physicians, surgeons, pharmacists and dentists, and not otherwise, when inclosed in packages in conformity with the conditions prescribed in Section 496: Provided, That the package bears the label or superscription of the manufacturer of or dealer in the article mailed.

In view of the decision in the case above cited the Postmaster General issued a regulation to take the place of paragraph 4 above, the new paragraph reading as follows:—

4. Medicines and anesthetic agents, which are not outwardly or of their own force dangerous or injurious to life, health, or property, and not in themselves unmailable (see Sections 454 and 480), may be admitted to the mails for transmission in the domestic mails when inclosed in packages in conformity with the conditions prescribed in Section 474: Provided, That the terms "medicines" and "anesthetic agents" shall not be construed to mean poisons. Provided further, That the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, surgeon, dentist, or veterinarian preparing or prescribing the same.

It will be observed that the revised regulation makes no distinction regarding the purchaser, leaving the purchase open to anyone. The question of what does and what does not constitute a poison in the meaning of the act is not defined either in the act or in the regulation, and when anyone proposes to mail an article the postal authorities decline to make a ruling as to what is meant by the word "poison," leaving the mailer to exercise his own judgment in the construction of the law, and, of course, to take the consequences of any errors of judgment which he may make.

This leaves the matter in a very unsatisfactory condition from the point of view of the legitimate drug trade, members of which are frequently requested to mail medicines containing poisons under circumstances which might possibly render them liable to punishment. In fact, a branch manager of one of our largest pharmaceutical houses was arrested in February of this year on the charge of illegal use of the mails in having shipped 100 heroin tablets by mail to a wholesale dealer in another city. Fortunately, however, this case was not pressed for trial, the charge being dismissed. The matter has been the subject of discussion by the Post Office authorities ever since your committee was appointed and various drafts of regulations have been submitted to the authorities both by members of your committee, by the members of the Drug Trade Conference, by the Drug Trade Section of the New York Board of Trade and Transportation, and others.

POSTAL REGULATIONS.

Proposed Amendment—Section 472, Par. 4.

4. Poisonous substances used for sanitary or medicinal purposes or in the arts and sciences which are not outwardly or of their own force dangerous or injurious to life, health, or property, and not in themselves unmailable (see Sections 454 and 480), may be admitted to the mails for transmission in the domestic mails when inclosed in containers made of metal, wood, papier-mache, or similar material, in such manner as to render impossible the escape of any of the contents: Provided, That the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, dentist or veterinarian preparing or prescribing the same, and that there be written or

printed on such label and on the outside wrapper of the package the word "Poison" in plain letters in red ink, and also that the name and address of the sender shall appear on the outside wrapper of the package: Provided further, That no preparation of cocaine, its salts or derivatives, or any preparation containing any of them, or any preparation of coca leaves, shall be admitted to the mails: Provided further, That no preparation containing more than one of the following substances in the amount stated, viz.: two grains of opium or its equivalent of an opium preparation, one-fourth of a grain of morphine, one-fourth of a grain of heroin, one grain of codeine, or any salt or derivative of any of them in one fluidounce, or, if a solid or semi-solid preparation, in one avoirdupois ounce, shall be admitted to the mails.

While the proposed regulation is more liberal than the one now in force, it is still open to some objection, both on the ground of inconsistency and of unnecessary hardship. In discussing the matter the Drug Trade Section of the New York Board of Trade and Transportation suggested the use of the following wording:

Medicinal preparations which contain poison in sufficient quantity and form, in combination with other ingredients, to be used exclusively as a curative or remedial substance, and which are not dangerous or injurious to life, safety, health or property, may be admitted to the mails for transmission in the domestic mails when inclosed in packages, in conformity with the conditions prescribed in Section 474; provided, that the article mailed bears the label or superscription of the manufacturer thereof, or dealer therein, or of the licensed physician, pharmacist, dentist or veterinarian preparing or prescribing the same.

The proposed regulation by the authorities is open to the objection that it would restrict the mailing of solid and semi-solid preparations to one ounce, practically regardless of the proportion of poison contained. A small tablet of Brown mixture, containing 3/100 of a grain of opium to the tablet, 274 of which are required to make an avoirdupois ounce, could not be mailed because an ounce contains over eight grains of opium. There are many other preparations which could be barred on the same ground. One suggested substitute for the last clause seems to cover this phase of the dose unit in dry form, at least from the manufacturer's standpoint. This reads as follows:

Provided further, That no preparation containing any one of the following substances in more than the amount stated, viz.: two grains of opium, or its equivalent of an opium preparation, one-fourth of a grain of morphine, one-fourth of a grain of heroin, one grain of codeine or any salt or derivative of any of them in one fluid ounce; or, if in the form of a medicinal tablet, pill or other dosage unit, in twelve such units; or if a solid or semi-solid preparation not in dosage units, in one avoirdupois ounce, shall be admitted to the mails.

It is a matter of gratification to note the attitude which has been taken by the postal authorities in this matter, whose willingness to confer with the drug trade gives us reason to hope that through such conference regulations may be devised which will fill all the varied requirements in the case.

Your committee holds that in construing this law it is highly important to take into consideration the object of the measure as a guide to the probable intent of Congress in passing the law. A consideration of the law of 1909 as a whole conveys the impression that the primary object of Section 472 is to protect the mails and those handling them from possible damage. It is true that the clause relating to intoxicating liquors does not square with this theory as to the object of the law, but the presence of such a regulation is easily understood when we take into consideration the effect which the use of the post office might exert in a nullification of local option laws. If we are right in the assumption that the primary

object of the law is to prevent possible injury to the mails or to those handling the mails it will be seen that the term "poison" should be construed as including only those articles or preparations which are liable to poison persons who handle them. Such a restriction of the term would exclude the large majority of medicaments which consist of or contain substances which are poisonous if taken internally in considerable quantities. The latest information which your committee is able to present is contained in the following letter addressed to the Chairman by the Second Assistant Postmaster General:—

"The receipt is acknowledged of your communication of the 5th instant, concerning the sending of poisons and articles and compositions containing poisons through the mails.

"The Department now has under consideration the question of the advisability of promulgating a regulation admitting these articles to domestic mails. If such a regulation shall be issued I will be pleased to forward a copy to you. Until a final conclusion in the matter is reached this office is not in a position to state the attitude of the Department in the matter."

It will be seen from this letter that the post office authorities themselves are not wholly pleased with the regulations as they now stand, and it will only be a matter of time when new regulations will be issued.

There has apparently been a disposition shown in some quarters to use the postal regulations as a means of suppressing the traffic in habit-forming drugs, though there seems to be no warrant for such a construction of the law. The passage of the Harrison antinarcotic bill, which will probably occur soon, will, fortunately, take care of this traffic in a satisfactory manner and do away with the need for burdening the postal authorities with a duty which is apparently not contemplated in the postal law.

We believe that the work of this committee and of other representatives of the drug trade has been of some use in enabling the Postmaster General to arrive at a clearer understanding of the subject. In view of the fact that matter has been taken up by the Drug Trade Conference and that the members of your committee have already laid their views before the department, we respectfully suggest that the committee be discharged.

REPORT OF THE COMMITTEE ON PHARMACEUTICAL NOMENCLATURE.

In view of the disruption of communication incident to the European war the International Pharmaceutical Conference which was to have been held in Berne, on August 8, has been indefinitely postponed. Under existing circumstances we cannot hope for any international coöperation in our efforts to minimize the danger arising from the duplication of names. We can, however, urge all manufacturers of pharmaceutical preparations to exercise the utmost caution in naming new products so as to reduce as much as possible the danger from that cause. The use of certain prefixes has grown to such an extent that even the most tenacious memory can hardly keep track of the preparations bearing them. Among these prefixes are: bio-, eu-, fer-, farm-, glyco-, hæma-, hæmo-, leci-, radio-, thio-, thymo-, uro-, uri-, val-, etc.

But aside from these names, which have merely one syllable in common, there are a vast number of new remedies being launched every year the proprietors of which do not seem to take the trouble to avoid exact duplication of names. We not only have identical names for wholly dissimilar preparations, but also have a number of names which resemble each other so closely either in sound or spelling that confusion is very apt to occur. Below we give a list of some striking instances of this character:—

Absorbine,	(1) a mercurial salve.
	(2) an embrocation consisting of ethereal oils and alcohols.
Acetal,	(1) a hypnotic remedy.
	(2) a liniment for headache.
Amol,	(1) an embrocation.
	(2) a moth preventative.
Borol,	(1) an antiseptic.
	(2) a cough syrup.
Cascarin,	(1) the active principle of cascara sagrada.
Cascarine,	(2) are pills made by Leprince, Paris.
Cascarino,	(3) a tea for the treatment of obesity.
Citrol,	(1) a laxative.
	(2) a photographic developer.
Dormol,	(1) a cathartic.
Dormal,	(2) a hypnotic.
Dormiol,	(1) a preservative for wood.
	(2) a hypnotic.
Energin,	(1) a chocolate preparation of Cod liver oil.
	(2) an albuminous nutriment.
Gallin,	(1) a remedy against gallstones.
	(2) a serum against cholera of fowl.
Guaiaform,	(1) a condensation product of guaiacol and formaldehyd.
	(2) a syrup containing guaiacol-sulphonate and bromoform.
Kreosal,	(1) an internal remedy.
Kreosol,	(2) an external application.
Lactal,	(1) a solution of aluminum lactate.
Lactol,	(2) an intestinal antiseptic.
Monol,	(1) a disinfectant for drinking water.
	(2) a photographic developer.
Navigo,	(1) a meat extract.
Navigol,	(2) a remedy for seasickness.
Nephretin,	(1)
Nephritin,	(2) two subrenal preparations of different origin.
Ozonur,	(1) a serum.
	(2) a nervine.
	(3) a dentrifice.
Salacetol,	(1) a remedy in intestinal disorders.
Salactol,	(2) an injection against diphtheria.
Sulfosol,	(1) a remedy in syphilis.
Sulfosot,	(2) a remedy in tuberculosis.

In view of the conditions which are likely to obtain in Europe for the next year your committee deems it improbable that any international coöperation can be obtained in any direction and therefore respectfully requests that your committee be discharged.

REPORT OF THE COMMITTEE ON EDITING RULES.

Your committee begs leave to make a *pro forma* report of progress and to request that the committee be discharged. It seems to be impossible to devise general rules of editing which will be accepted throughout pharmacy save as to nomenclature, and in this direction the decisions of the committee on revisions furnish a guide not only for the nomenclature of pharmacopœial preparations, but also as a guide for other names by analogy. Respectfully,

CASWELL A. MAYO, Chairman.

ANTISEPTICS IN WAR.

Wounds should receive efficient disinfectant treatment as soon as possible after their infliction, and they should not be treated only by the application of an antiseptic dressing. The double cyanide of zinc and mercury in powder form is useless on the field, where wind and rain prevent it from reaching the wounds. When made into a paste, however, with 1 in 20 carbolic acid (presumably in water) it has been used with complete success. The wounds, says the author, healed beneath a mixture of paste and blood clots, and were beautiful to see. The dye with which the powder is stained acts as a mordant, and by it the chemicals are more firmly fixed in the tissues. This paste can be kept in collapsible tubes without deterioration; in fact, some which has been kept in this way since the South African War remains of the same consistence to-day, while the metal of the tubes has not been affected by the contained chemical. Regret is expressed at the fact that our troops are being supplied with iodine solution as a disinfectant. Many wounds, says the author, has arrived in this country in a disgraceful condition after the early application of iodine, and he thinks that the substance has proved a failure in treating large wounds. A better solution than iodine is a mixture of 1 in 20 carbolic acid and 1 in 500 mercury perchloride in absolute alcohol, colored with rosaline. The carbolic acid is a solvent of fat as well as a germicide; mercuric chloride is a most powerful germicide, while the rosaline, acting as a mordant, fixes the mercuric chloride for weeks after application of the solution. The alcohol encourages penetration of the antiseptic, and does not macerate the tissues like water. The liquid has been applied frequently and freely to large granulating wounds without ill effects. This would be better for the soldier to carry than iodine. It is absolutely non-irritating, and can be safely applied to the scrotum, eyelid, and other parts liable to show the results of irritants. Hydrogen peroxide as a constant application to wounds is objected to on the ground that the granulation tissue under its influence becomes anæmic and swollen, though it may have its uses in removing blood clot and sloughs.—G. L. Cheade, C.V.O., C.B., F.R.C. S. (*Brit. Med. Journ.*, December 12, 1914, 1,006)

Scientific Section

Papers Presented at the Sixty-Second Annual Convention

THE PHARMACOGNOSY OF THE MEDICINAL RHAMNUS BARKS.

E. N. GATHERCOAL, PH. G.

(Continued from page 75.)

The Plant Characters.

All of the RHAMNUS plants that have been mentioned, are shrubs or small trees, though some are inclined to be procumbent. They have simple, mostly alternate, petioled leaves, usually thin, bright green and glossy, at least on the upper surface, and rather prominently veined. The flowers are small, axillary, usually in small clusters and greenish. The parts of the flower are in fours or fives, though the petals may be absent and the ovary is but one. The flowers are sometimes dicœcious, and upon this character these RHAMNUS species seem to fall into two classes, possessing, also, other distinct botanical characteristics, which extend even to the bark and thus cause the bark-drugs derived from the plants to form two rather distinct classes.

In the first division are *Rhamnus catharticus, Rhamnus tinctorius* (*chlorophorus*) and *Rhamnus croceus*. These are characterized, for instance, by being rather small shrubs, thorny, with leaves not over 2 or 3 inches long, the flowers dicœcious and the parts in fours, the bark thin, the cork purple or blackish in color, the bast bundles very prominent and loose on the inner surface of the dried bark and the bark free from stone cells.

The other group of these RHAMNI includes the species *purshiana, californica, caroliniana* and *wightii*. These plants are tree-like or large shrubs, non-thorny, with leaves more than 2 or 3 inches long, the flowers perfect and the parts in fives, the bark mostly rather thick, the cork red-brown in color, the inner surface of the dried bark nearly smooth and the bark containing many groups of stone cells.

It is to be noted that *Rhamnus frangula*, included in neither group, corresponds in its botanical features with the second group, but its bark characteristics are like those of group one.

Rhamnus catharticus:—A spreading shrub, 6 to 10 feet high, though rarely up to 20 feet high, the ends of the twigs usually forming into stout spines. Leaves are up to 2½ inches long, but mostly less than 2 inches, broadly ovate or elliptical, rather acute at apex and obtuse at base, finely serrate, smooth and of thin texture. The veins are prominent on under surface, the laterals, 3 or 4 pairs, inclined to branch from lower half of midrib. The flowers are dicœcious, 3 or 4 in an axil, on peduncles, the calyx-tube with 4 small teeth, the 4 petals narrow and scale-like.

The fruit is globose, lobed by 4 delicate longitudinal grooves, with 3 or 4 seeds, each deeply grooved.

Rhamnus tinctorius (*chlorophorus*):—The following is Decaisne's description: Twigs, cylindrical, ash gray, terminating in spines and scattered short hairs; leaves 3 to 5 cm. long, 2 to 3 cm. wide, alternate-opposite, short petiolate, ovate, acuminate, base cuneate, denticulate, glabrous above, pubescent beneath, nerves of leaf depressed on upper surface, prominent on lower surface; stipules linear, stiff hair-like, membraneous; flowers (male) in twos or fours in the axils; calyx tube infundibuliform, cut into lanceolate, reflex, barely pubescent pieces; petals obovate, membranaceous; stamens not quite equal in height; ovary abortive; style divided, obtuse; berries small nuts obovoid or rounded, slightly furrowed below, shiny.

Rhamnus croceus:—Is shrubby, low and branching with spiny twigs and yellow wood. Leaves ½ inch long, roundish-obovate, toothed, coriaceous, evergreen, nearly glabrous, when dry bright yellow-brown beneath. Flowers on short pedicels, 2 to 6 in the axils, dicœcious, apetalous, sepal teeth and stamens four, ovary one, 2-celled; fruit yellowish, greenish and, when ripe, red, small obovate, usually, by abortion, 1-seeded; seed with a longitudinal furrow on one side.

Rhamnus purshiana:—Usually tree-like, averaging 15 to 20 feet high, but sometimes attaining a height of 40 feet with a trunk 18 inches in diameter. Leaves up to 7 inches long, broadly elliptic, apex obtuse, finely serrate, very thin, somewhat pubescent beneath and with prominent, evenly-spaced straight lateral veins. The flowers are in axillary clusters, the parts in fives. The fruit is 3-lobed and 3-seeded.

Rhamnus californica:—Shrubby, sometimes procumbent, again tree-like. It averages 15 feet high, though attaining a maximum of 30 feet. Leaves up to 3 or 4 inches long, oblong or obovate, obtuse apex, entire or finely serrate, rather thick, glabrous above, usually pubescent beneath. The flowers and fruit are like those of *Rhamnus purshiana*, though the fruit is usually 2-seeded.

Rhamnus caroliniana:—A shrub or small tree, with broadly elliptic leaves, 2 to 6 inches long, 1 to 2½ inches wide, acute obscurely serrate, smooth, slightly pubescent on the veins beneath. Flowers in axillary, peduncled umbels or occasionally solitary, the parts in fives. Fruit is globular, smooth, sweet, 3-seeded.

Rhamnus wightii:—A shrub or small tree 9 to 12 feet high. The leaves are 3 to 5 inches long, 1 to 2 inches wide, elliptical or ovate, sharply acute, finely serrate,

(Detail of cut on succeeding page.)

RHAMNUS PURSHIANA BARK.

Fig. 1.—Transverse section from just below terminal bud. A—outer bark, B—middle bark, C—inner bark. 1—epidermis with curved trichomes; 2—phellogenic layer (cork does not develop until the middle of first summer); 3—outer parenchyma developing into collenchyma, 4—inner parenchyma containing schizogenic mucilage sacs; 5—living cells compressed and with living contents; 7—intercellular space filled with mucilage; 8—rosette aggregate of calcium oxalate (these are abundant in the parenchyma of the middle bark); 9—outer layer of angular, elongated cells, the developing primary bast; 10—primary phloem; 11—medullary ray of the bark; 12—developing cambium. (X 600, reduced ½.)

Fig. 2.—Longitudinal radial section from just below the terminal bud. Letters and numbers as under Fig. 1. The pores in the walls of the parenchyma cells and the living cells of the mucilage sacs are very evident. (X 600, reduced ½.)

Figs. 3 and 3a.—Two mucilage sacs from the path just below terminal bud. The living cells are but slightly compressed, have no pores evident in the wall and contain living contents. (X 600, reduced ½.)

Fig. 4.—Transverse section of outer bark from a 4 year old stem. 1—epidermis with a thick cuticle; 2—cork with brownish wall; 3—phellogen; 4—parenchyma of middle bark. (X 600, reduced ½.)

Fig. 5.—Transverse section of inner bark from a 4 year old stem. 1—secondary bast with crystal fibers; 2—medullary ray; 3—phloem; 4—cambium. (X 600, reduced ½.)

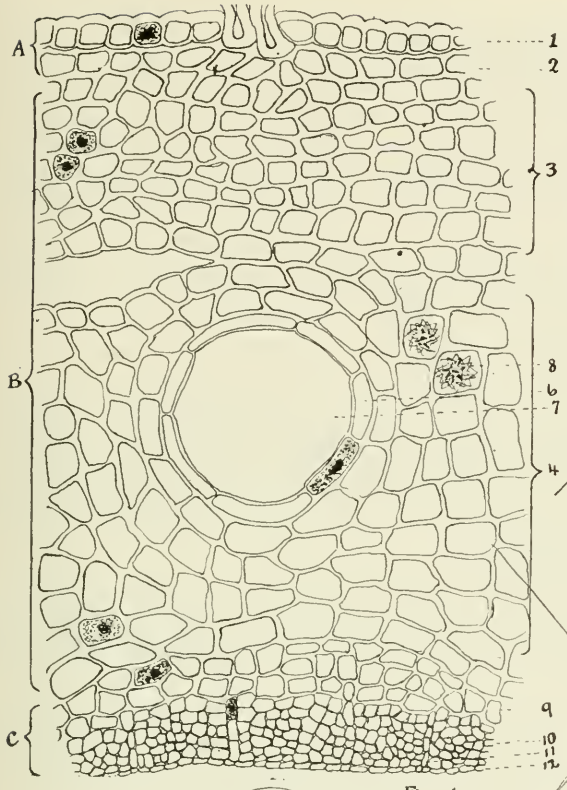


Fig. 1

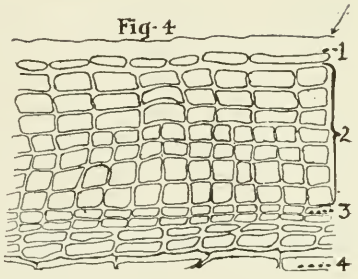


Fig. 4

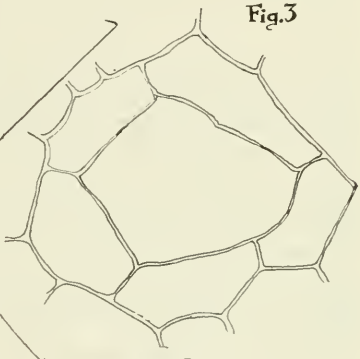


Fig. 3

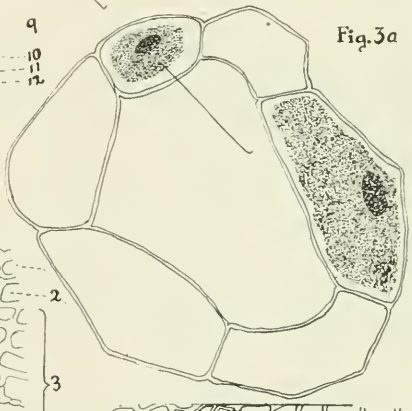


Fig. 3a

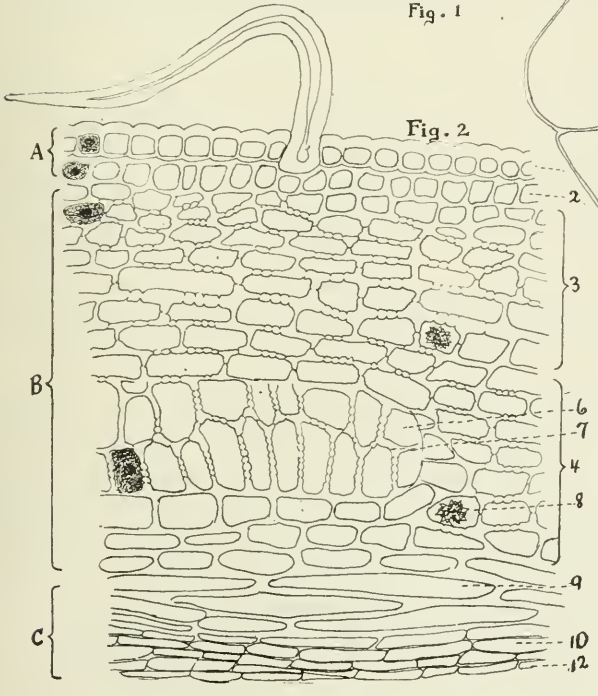


Fig. 2

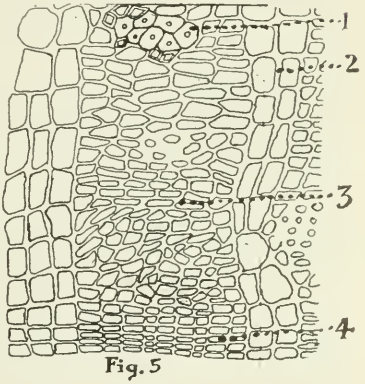


Fig. 5

smooth. Flowers are greenish-white, in axillary clusters, calyx 5-toothed, petals 5, stamens 5, stigmas 3. Fruit ovoid, 3-seeded.

Rhamnus frangula:—A spreading shrub, non-thorny, 6 to 15 feet or at the extreme 20 feet high. Leaves 1 to 3 inches long, broadly oval or ovate, obtuse, entire, smooth above, somewhat pubescent below. The veins are prominent on the lower surface, the laterals numerous, straight and coming off at regular intervals along the midrib. Flowers, from May to September are perfect, small, whitish, 2 or 3 in each axil, the parts in fives. Fruit green, then red and when fully ripe blackish, is globular, the size of a large currant, smooth, though with 2 or sometimes 3 slight longitudinal grooves and usually 2-seeded.

EXTERNAL APPEARANCE OF THE DRUG.

It is to be noted that the bark from any tree or shrub usually presents wide differences in appearance, according to the age of the stem from which it is taken. This fact holds true of the bark-drugs derived from the RHAMNI under consideration and, though in the collection of the bark for the commercial drug, some effort is made to keep the article fairly uniform in appearance yet an admixture of bark from older and younger stems is common.

These RHAMNUS barks fall into the same groups as were noted under the botanical description of the plants. Thus the barks from *Rhamnus catharticus, Rhamnus tinctorius* (*chlorophorus*), *Rhamnus croceus* and *Rhamnus frangula* fall into one division, characterized particularly by the relative thinness of the bark, the fibrous fracture and tough, stringy bast bundles and the absence of stone cells from the middle bark. In the other group comprising the barks of *Rhamnus purshiana, Rhamnus californica, Rhamnus caroliniana* and *Rhamnus wightii* the barks are thicker, slightly fibrous in fracture with little external evidence of bast bundles and possess many stone cells.

All of these barks have some features in common. Thus, they all occur in quills and curved pieces, the thinner barks from the young stems being more inclined to quill and the thicker bark remaining in more or less curved pieces. On all of these barks, lenticels occur after the stem is one or two years old, but these may be more or less obliterated by the increased growth of cork or be covered by lichens which are present to a more or less extent. The color of the inner surface of the barks darkens with age. When freshly gathered, this color is usually a cream or very light-brown, but upon drying and aging may change to a dark seal-brown or almost black. The odor is slight, the taste rather mildly bitter, acrid and astringent.

Rhamnus frangula Bark:—(The description is made from various lots of the commercial drug purchased from drug dealers.)

In single or double quills, very seldom in curved pieces, up to .5 M. in length and 3 cm. in diameter, often crushed and flattened. The bark is seldom more than 1 mm. thick, though it may reach 2 mm. in thickness. The outer surface is a dark greenish- or brownish-purple, sometimes almost black, modified by grayish lenticels and lichens. The lenticels, usually abundant, regularly arranged and conspicuous, are transversely elongated up to 5 mm. and of a light gray or grayish-brown color. The lichens are whitish, fairly abundant, but rather inconspicuous. Some longitudinal wrinkles may be present. On bark from the older

stems, there may be considerable roughened, fissured brownish cork. The inner surface is marked by fine striations and occasionally loosened bast and varies in color from a light cinnamon to a dark seal-brown. It fractures easily, rather abruptly and unevenly and shows projecting fibers, fine and short in young bark, sometimes longer and coarser in older bark but in this feature frangula bark differs markedly from the other members of this group. Odor slight, taste mildly bitter, astringent and acrid.

Rhamnus catharticus Bark:—(From samples received from Professor William Mansfield of New York, the Missouri Botanical Gardens of St. Louis, and from shrubs in the South Parks of Chicago and in the author's gardens in Oak Park.)

In quills and curved pieces up to .5 M. in length and 2 cm. in width, the bark up to 2 mm. in thickness. The outer surface is black, sometimes with a brownish tinge and with occasional grayish lichens. The lenticels are rather few, small, rounded or somewhat elongated transversely, irregularly scattered and very dark-brown or almost black in color. On pieces from older stems the cork is transversely cracked and inclined to peel transversely in thin flakes. The inner surface is marked by fine striations and by many loosened bast strands so that it often appears very hairy. The color is of various shades of brown, the bast bundles nearly white. Odor is slightly aromatic, the taste bitter and acrid. It fractures easily and evenly except for the projecting bast bundles which may form a fine white "brush" an inch in length.

Rhamnus chlorophorus (*tinctorius*) *Bark:*—(From a specimen exhibited in a collection of rare drugs at the World's Columbian Exposition in 1893.)

Long, narrow, curved strips, often with some wood attached, the bark seldom more than 2 mm. in thickness. The external color is more inclined to purple than red, but modified by grayish lichens, red-brown transverse lenticels, rough, blackish cork, etc. The inner surface is like that of *Rhamnus catharticus* bark but more exaggerated. The base color of the inner surface is very dark brown, with the numerous light yellow bast strands easily breaking away and projecting as long threads. Upon fracturing, the inner bark becomes lamellated and the bast strands easily separate from the other tissues. The odor and taste correspond to those of the other Rhamnus barks.

Rhamnus croceus Bark:—(From specimens in the College Museum and received from Mr. Theodore Payne of Los Angeles, Calif.)

In thin quills and curved pieces, up to 3 or 4 mm. thick. Outer surface grayish to dark-brown with a marked red tinge where the outer layers are scraped away. The lichens are abundant, whitish and grayish and some bear brownish apothecia. Lenticels are inconspicuous. The inner surface is dark-brown with more or less light-yellow longitudinal lines or loose projecting bast strands. The fracture is short and even in the outer layers but exposing numerous short projecting bast bundles in the inner layer. The inner bark flakes off rather easily, exposing layer after layer of these tough interlacing strands of bast. The odor is slight but distinctly aromatic and the taste slightly bitter and rather pungent.

Rhamnus carniolica Bark:—(From a specimen received from Professor Henry Kraemer, Philadelphia.)

In quills or curved strips, the bark 1 to 3 mm. thick. The outer surface is dark

red-brown modified by many grayish lichens and numerous, rather obscure, irregular, light-brown lenticels, 1 to 2 mm. long. Some longitudinal wrinkles may be seen. The inner surface is grayish to dark-brown and striate. The fracture is short-fibrous, the fibers projecting .5 to 1 cm. from the inner bark. Odor slight; taste bitter and astringent.

Rhamnus purshiana Bark:—Commercial Cascara bark is seldom in quills, usually in pieces more or less curved or nearly flat, 5 to 10 cm. long and proportionately quite broad. The bark is seldom less than 1 mm. thick, usually 2 or 3 mm., but up to even 8 mm. thick. The basic color of the outer surface is red-brown but it is often so completely covered with dense whitish lichens that small pieces may be entirely white or grayish. Lenticels are present, transversely elongated and light brown, but, where the lichens are abundant, are inconspicuous. The lichens often show black or brownish apothecia. Adhering mosses are occasionally found and on the thicker pieces roughly fissured cork is present. The inner surface is finely striate and varies from a light yellow-brown to a dark- or purplish-brown. The fracture is quite abrupt, fairly even, though fine projecting fibers can be seen on the fractured surface. It has only a slight odor but a distinctly bitter, acrid and disagreeable taste.

Rhamnus californica Bark:—(Samples from Dr. Albert Schneider of San Francisco, and Mr. Theodore Payne of Los Angeles, California.)

In quills, curved and flat pieces, the bark rather thinner than Cascara bark. The natural color of the outer surface is a dull grayish red-brown exhibiting rather numerous but small and inconspicuous light-brown lenticels. Most of the bark is covered with grayish lichens, evenly distributed. These are often roughened and dull, rather than silvery as on cascara. The black apothecia are numerous. The inner portion of the cork is a bright reddish-brown. The inner surface of the bark varies from a light to a dark brown and is smooth or finely striate. The fracture, odor and taste are as those of Cascara bark.

Rhamnus wightii Bark:—(Specimens from O. A. Farwell, Detroit.)

In single quills or curved pieces of varying thickness, color and markings, according to the age of the stem from which it is collected. From young stems the bark is seldom more than 1 mm. thick, of a brown color, more or less covered with grayish lichens, or reddish brown where the outer layer is scraped off so as to

(Detail of cut on succeeding page.)

RHAMNUS PURSHIANA BARK.

Fig. 6.—Mature mucilage sac from a transverse section 15 mm. below terminal bud. The lining cells (1) elongated tangentially and compressed radially (to the mucilage sac), with walls slightly lignified, with pores and of about the same thickness as the surrounding parenchyma cell-walls (2). (X 600, reduced ½.)

Fig. 7.—As in Fig. 6, except that the drawing is from a longitudinal section and is of a portion of one side of a wide mucilage sac. (X 600, reduced ½.)

Fig. 8.—Transverse section 30 cm. below terminal bud. 1—mature cork cells; 2—phellogen; 3—collenchyma. (X 600, reduced ½.)

Fig. 9.—Transverse section 30 cm. below terminal bud. 1—collenchyma; 2—group of stone cells with very distinct pores and stratifications developing from parenchyma of the middle bark; 3—prismatic crystals, single or in group, found in connection with the group of developing stone-cells; 4—parenchyma cells of the middle bark; 5—large rosette aggregate of calcium oxalate crystals; 6—small group of unlignified primary bast. (X 600, reduced ½.)

Fig. 10.—Transverse section 30 cm. below terminal bud. 1—parenchyma of middle bark; 2—medullary ray; 3—phloem; 4—sieve tube showing sieve plate; 5—companion cell; 6—small group of secondary bast; 7—two crystal fibers in connection with the secondary bast; 8—small rosette aggregate of calcium oxalate crystals; 9—cambium. (X 600, reduced ½.)

Fig. 11. Longitudinal section 30 cm. below terminal bud cut radially through phloem. 2—phloem parenchyma; 3—immature secondary bast; 4—immature crystal fibers; 5—row of rosette aggregates separated by septa (the whole row formed from one cambium cell). (X 600, reduced ½.)

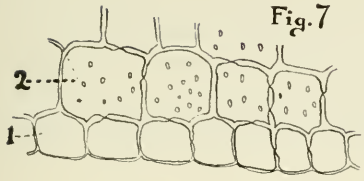


Fig. 7

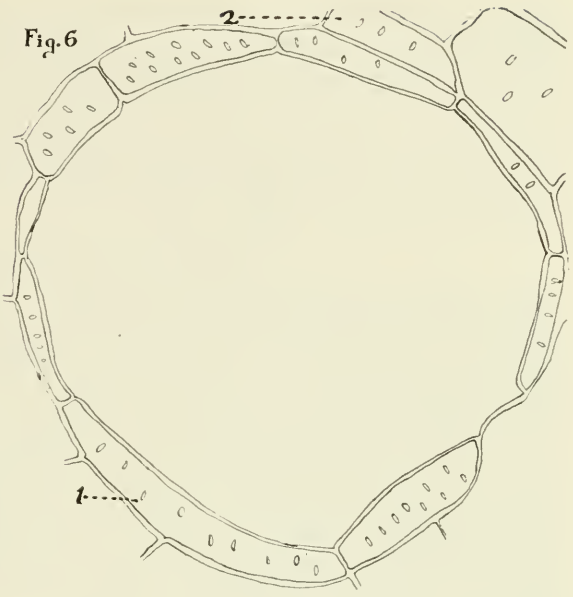


Fig. 6

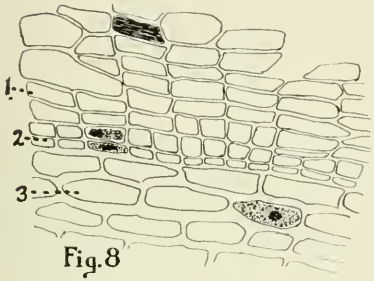


Fig. 8

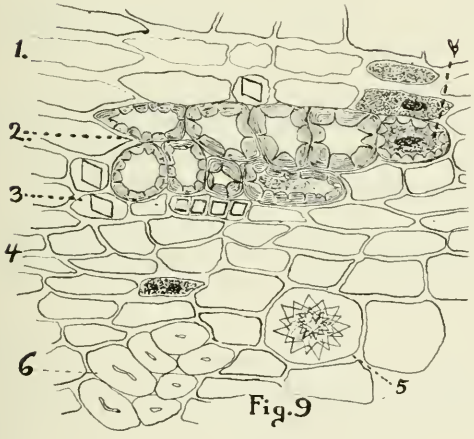


Fig. 9

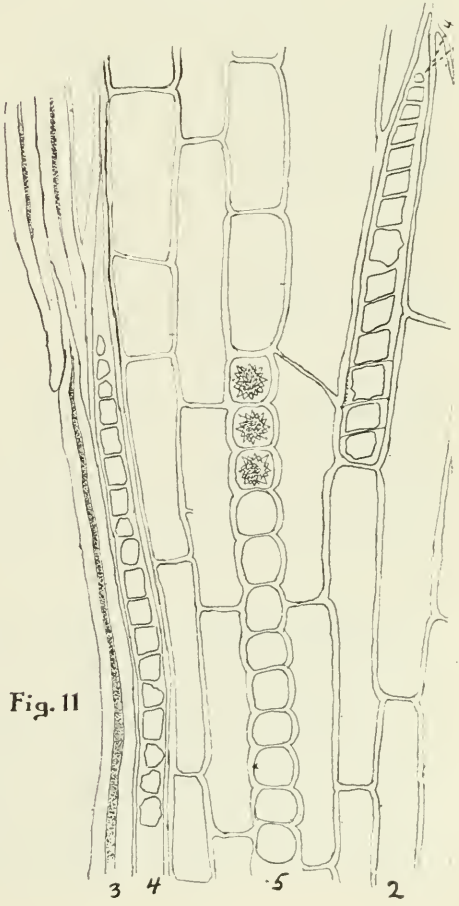
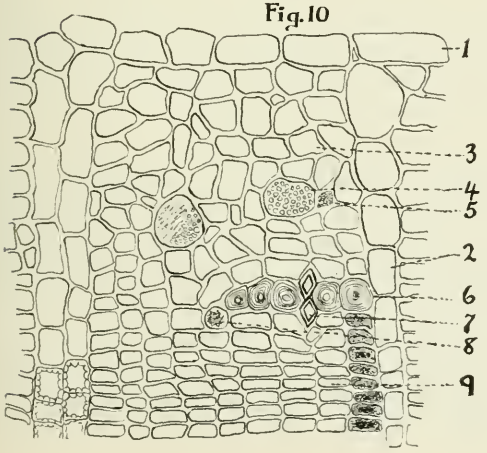


Fig. 11

Fig. 10



expose the middle layer. Older bark is 2 or 3 mm. in thickness with grayish or whitish lichens and numerous corky lenticels. Bark from old stems is thicker and more or less rugged from numerous, deep, transverse or irregular cracks in the cork and of a dark brown color. The inner surface is dark brown, the color deepening with exposure in air to almost black. The fracture of the outer portion is short but of the inner layer fibrous and tough. It has a slightly aromatic odor and a somewhat astringent, bitter taste.

HISTOLOGY OF THE DRUGS.

The RHAMNUS barks present, histologically, many common features. They each exhibit an outer bark of cork tissue, a middle bark of parenchyma tissue bearing chlorophyll and an inner bark containing in addition to the phloem strands and medullary rays, strands of bast.

The chief histological distinction between these barks lies in the presence or absence of stone cells in the middle bark, and this distinction forms the same groups that have already been twice mentioned; viz: one group embracing the bark from the species *catharticus, tinctorius* (*chlorophorus*), *croceus* and *frangula* in which stone cells are absent and the group including the barks from the species *purshiana, californica, caroliniana* and *wightii* in which stone cells are present.

Rhamnus purshiana bark has been selected for the type-study and its structure is described in detail. The descriptions of the other barks bring out especially the points of distinction from Cascara bark.

Rhamnus purshiana Bark:—The fresh material used for these sections is from shrubs supplied by the U. S. Dept. of Agriculture and grown in Oak Park, Ill., and from specimens sent from the Missouri Botanical Gardens at St. Louis, Mo.

In a transverse section, cut from just beneath the terminal bud, from a stem collected in late fall, the bark measures about 0.4 mm. in thickness on each side of the stem, which was about 2 mm. in diameter. It is easily differentiated into an outer, middle and inner bark.

The outer bark (Figs. 1 and 2) consists of a row of epidermal cells, 15 to 20 microns in diameter, nearly cubical (square in both transverse and longitudinal sections), with thin inner and side walls and an outer wall thickened to 5 microns and cutinized. The lumen is filled with dark-brown contents. The epidermis bears many curved, pointed, unicellular trichomes up to 20 microns in thickness and 2 mm. long. Their walls are cutinized and form about two-thirds the diameter at the base of the trichome. The trichomes are even more abundant on the scales of the bud.

The middle bark (Figs. 1 and 2) consists of an outer layer of parenchyma cells somewhat elongated tangentially, with cytoplasm and nucleus and somewhat thickened, pored, cellulose walls. Then follows typical rounded parenchyma cells surrounding numerous tubular mucilage-sacs, the largest of which are 0.2 mm. across. The lumen of these sacs is bordered by thin-walled cells elongated tangentially (to the sac) and compressed radially (Fig. 1). These cells are, in fact, nearly cylindrical, for their diameter longitudinally (Fig. 2) is usually no greater than the radial diameter. These mucilage-sacs are apparently of schizogenic origin.

A study of the pith, where these secretion-sacs are also abundant, affords still further support of the view that these sacs are of schizogenic origin. Thus, as shown in Fig. 3, there are five cells, broad and thin-walled, with living contents surrounding an intercellular space containing mucilage. Fig. 3*a* represents a more mature secretion sac and shows the lining cells somewhat compressed but yet with living contents and thin, non-porous cellulose walls. Fig. 6 indicates a mature secretion-vessel from the pith in transverse section. It is 180 microns across, bordered by cylindrical cells elongated tangentially (to the vessel) to a maximum length of 135 microns, a width radially of 10 to 20 microns and a depth (as seen in Fig. 7), nearly the same. These cells possess simple, oval pores connecting one cell with another and with the adjoining pith parenchyma. In Fig. 7, a view of one side of one of these secretion-sacs in the pith cut longitudinally 10 mm. below the terminal bud, the secretion-cells show the wall facing the lumen of the vessel to be very thin and without pores, but the walls adjacent to the pith parenchyma to be thicker and to possess pores. The walls of both secretion- and parenchyma-cells are slightly lignified. The maximum length of these secretion-sacs is 0.7 mm., but in all observed, the ends were not bordered with secretion-cells, indicating possibly that the vessels were curved and longer than above stated. The mucilage stains with methylene blue, as does that of Althaea and Ulmus and in sections cut and kept in a small amount of water the fluid becomes quite sticky and stringy. The mucilage-sacs, both in the bark and pith, are present in abundance only for a short distance from the terminal bud. They are abundant in the bark, however, for a distance of several mm. about each lateral bud. Evidently the mucilage is stored for the use of the buds in their early spring development.

A few rosette aggregates of calcium oxalate (Figs. 1 and 9), 15 to 45 microns in diameter are found in the middle bark as also in the pith in this section.

The inner bark (Figs. 1 and 2) contains an almost continuous outer layer of cells, rounded, and from 5 to 10 microns wide, in transverse sections, but already elongated and with overlapping, pointed ends in longitudinal section. Their walls are of cellulose, somewhat thickened and they contain cytoplasm and nucleus. This is the developing primary bast. The inner layer of the inner bark is the primary phloem consisting of very small thin-walled cells with living contents. Sieve-tubes cannot be differentiated. The cambium is beginning to form. The wood circle, while very narrow, yet contains many xylem masses rather evenly spaced with two or three or several rows of parenchyma between them. Each mass contains from 1 to 10 very small spiral tracheal tubes.

In a transverse section cut from the stem, 2 mm. below the terminal bud, it was observed that the outer wall of the epidermis was much thickened, up to 10 microns thick; that the mucilage-sacs of the middle bark were somewhat larger, the lining cells being more compressed radially and elongated tangentially; that the primary bast cells had somewhat thickened their walls and were becoming angular in shape; that the cambium was well formed, had added several tracheal tubes to each xylem mass and had increased the amount of phloem. Large rosette aggregates were very abundant in middle bark and pith. The formation of crystals in the secondary phloem was also noted. Medullary rays between the xylem masses and extending into the phloem were easily differentiated.

In sections cut from the same stem, 15 mm. below the terminal bud, it was noted that the outer wall of the epidermis had further thickened and was now fully 15 microns wide. The mucilage-sacs were few. The outer parenchyma of the middle bark had very much thickened its cell walls with cellulose, in fact resembled collenchyma. Primary bast had further thickened its walls which still remain cellulose. The cambium had developed much xylem, the wood circle being now 2.5 mm. in thickness. The medullary rays were distinct, filled with starch, the grains being 4 to 6 microns wide.

At 20 cm. from the terminal bud the first development of cork was noted, otherwise the stem showed little change except a large growth of wood. At about 25 cm. from the bud the first lignified secondary bast was seen and at 30 cm. the formation of stone cells from parenchyma cells of the middle bark had begun.

A description of sections of the stem at 30 cm. from the terminal bud is as follows:—

Total diameter of stem 7 mm., of which the bark is 0.6 mm. on each side.

The outer bark (Fig. 8) consists of six rows of cork cells from 15 to 30 microns tangentially, 10 to 15 microns radially and the same longitudinally. In transverse and longitudinal sections they are 4-sided and arranged in radial rows. The walls are thin, suberized and brownish in color. Some of the cells appear to be filled with a homogenous brown mass.

Middle bark (Fig. 9). The outer collenchyma has undergone no change. Its cells are from 15 to 45 microns tangentially, 10 to 15 microns radially and 30 to 60 microns longitudinally. Their walls of cellulose are from 3 to 8 microns in thickness; the contents are cytoplasm and nucleus and dark brown in color. The inner layer of the middle bark consists of parenchyma 15 to 30 microns tangentially and longitudinally, 10 to 15 microns radially, the cellulose walls 3 or 4 microns in thickness with elongated oval or angular pores. The contents are similar to those of the collenchyma. Mucilage-sacs, except near lateral buds, are practically absent.

The stone cells develop from the parenchyma of the middle bark apparently by a thickening and lignification of the walls. No characteristics in any of the parenchyma cells could be found to indicate they would become stone cells until the first sign of lignification occurred. In Fig. 9, *b* indicates a cell with walls no thicker than the adjoining parenchyma cells, but it shows pores more plainly and it has begun to lignify. Usually but one or two parenchyma cells at a spot show

(Detail of cut on succeeding page.)

RHAMNUS PURSHIANA BARK.

Fig. 12.—Longitudinal section of phloem showing development of a row of calcium oxalate rosettes separated by delicate septa. (X 600, reduced ½.)

Fig. 15.—Tangential section through phloem of bark 1.5 mm. thick from a 5-year-old stem. 1—phloem parenchyma; 2—one fiber of a bast bundle; 3—crystal fibers with prismatic crystals separated by septa; 4—medullary ray. (X 600, reduced ½.)

Fig. 16.—Transverse section from bark 5 mm. thick. A group of bast fibers associated with stone cells and crystal cells. 1—bast fiber; 2—stone cell; 3—crystal cell; 4—parenchyma cell of phloem. (X 600, reduced ½.)

Fig. 17.—Stone cells from the powder.

Fig. 18.—Cork in surface view from the powder.

Fig. 19.—Phloem parenchyma containing starch from the powder.

Fig. 20.—Phloem parenchyma with sieve tube and a radial view of a medullary ray (from the powder).

Fig. 21.—Phloem parenchyma with medullary rays in tangential view (from the powder).

Fig. 22.—The end of a mass of bast. 1—bast fibers; 2—crystal fibers; 3—crystal fiber inside view.

Figs. 17 to 22, inclusive, are X 600, reduced ½.

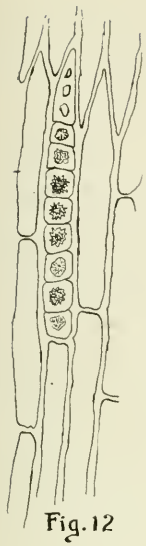
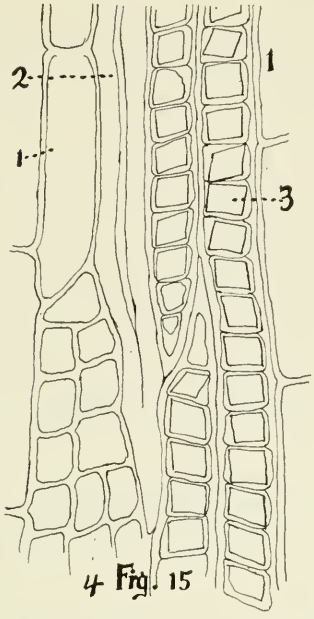


Fig. 12



4 Fig. 15

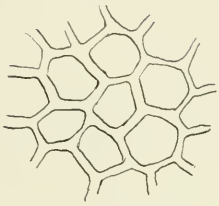
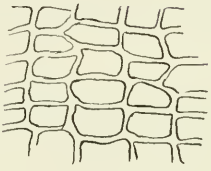


Fig. 18



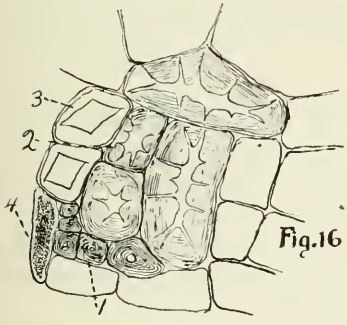


Fig. 16



Fig. 17

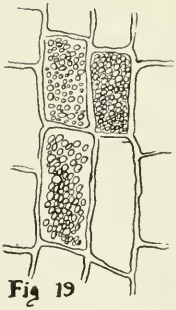


Fig 19

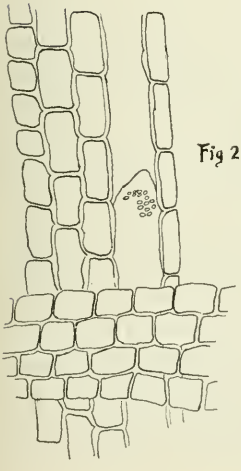


Fig 20

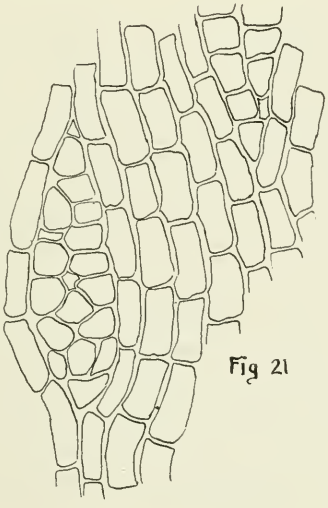


Fig 21

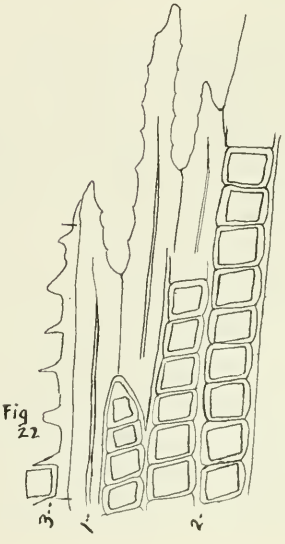


Fig 22

these first signs of change but neighboring cells follow until they form a group of stone cells varying in size but usually not larger than 4 cells radially, 20 cells tangentially and 10 cells longitudinally. The first section showing stone cells contained but the one small group, but the number of groups rapidly increased from this point on.

There are formed at this time in some of the parenchyma cells adjoining the stone cell group, small prismatic crystals of calcium oxalate, seldom exceeding 15 microns in greatest diameter and usually not more than 8 or 10 microns. One or more of the crystals may occur in a cell. If more than one occur, they are separated by a delicate septum or septa of cellulose. The slight enlargement of the parenchyma cells, when forming into stone cells, tends to compress the surrounding parenchyma and causes the stone cells to be angular or irregular in shape. Usually their greatest diameter is tangentially and seldom exceeds 60 microns. They mostly are from 30 to 45 microns, some as small as 15 microns in diameter. The walls are thickened sometimes almost to the extinguishment of the lumen (Fig. 14), again the lumen may occupy one-third the total diameter (Figs. 16 and 17). Pores are prominent and stratifications may be distinguished.

Inner bark (Fig. 10). This is still very narrow, hardly more than 100 microns wide. The primary bast (Fig. 9), in small scattered bundles, the fibers with thick cellulose walls, may be seen at the outer edge of the inner bark. The phloem presents nothing new.

The secondary bast, first observed about 5 cm. higher up in the stem, is now seen to be present in small bundles of 2 to 24 fibers, 30 bundles in a single row being present in this transverse section. The bast fibers seldom exceed 15 microns in diameter, nor more than 0.8 mm. in length. They are circular or somewhat angular in transverse section and in longitudinal view fiber-like with slenderly tapering ends (Fig. 11). The lumen is seldom more than one-fifth the total diameter. The walls are partially lignified, the cell contents nearly gone.

Crystal fibers are found adjacent to the bast bundles (Fig. 11). One bundle of bast in transverse section containing 13 bast fibers had adjacent to it 13 crystal fibers, another bundle of 8 bast fibers had 8 crystal fibers about it, another of 6 bast fibers had 4 crystal fibers, another of 8 bast fibers had 2 crystal fibers, one of 16 bast fibers had 9 crystal fibers about it and one of 16 bast fibers had 16 crystal fibers. It could not be established that the number of crystal fibers corresponds with the number of bast fibers in the bundle, though according to my observations the crystal fibers never exceed in number the bast fibers. While sometimes there is but one tangential row of bast fibers in a bundle, they often are arranged in 2 or 3 or even 4 rows. The crystal fibers, though sometimes 15 to 20 microns in width, are usually less than that. They average almost the same width as do the bast fibers. While it is usually difficult to obtain their length, yet in two or three instances they were clearly shown to exceed 300 microns in length and they probably closely approximate the bast fibers in length. They are inclined to be angular in transverse section, usually 4-sided, and fiber-shape longitudinally, with pointed ends, though often not so pointed as the bast fibers. The walls are thin, about the same as the surrounding phloem cells, 1 to 2 microns thick. The

crystals they contain are mostly prisms of calcium oxalate arranged in a single row occupying nearly the width and length of the lumen. They are largest and best-formed at the middle of the fiber and become smaller and more irregular toward the ends, where they are very small. In some fibers rosettes are associated with the prismatic crystals. The number of crystals in a fiber is often 30 or 40. The crystals are rhombohedrons, each of the six faces being nearly equal in size and shape, the acute angles being of about 60 degrees. Their diameter seldom exceeds 15 microns, the smallest being about 5 microns. In the more mature fibers the crystals are separated by septa of cellulose. These septa form with the development of the fiber and the formation of the crystals, but are difficult to distinguish until after the fiber matures. Then the wall adjacent to the bast and the side walls, as also the septa, become lignified. The outer wall was never found to be lignified, but in older bark or in the powdered drug was often broken away, leaving the lignified septa projecting from the inner thickened lignified wall (Fig. 22).

The phloem also contains longitudinal rows of rosette aggregates of calcium oxalate (Fig. 11), though these usually are not adjacent to the bundles of bast. These crystals are apparently produced in the elongated cells of the cambium, 3 or 4 to 20 or 30 crystals in a cell, but from the time crystals begin to form delicate septa begin to show between them (Fig. 12). With the enlargement of the cell and of the crystals and the increased thickness of the septa, the whole takes on the appearance of a row of rounded parenchyma cells each containing a rosette aggregate (Fig. 11). Crystals of any kind were not observed in the medullary rays, but their cells are filled with starch.

The cambium of 4 or 5 rows is well defined. The average width of the cambium cells radially was 8 microns, tangentially 15 microns, longitudinally 60 microns. The medullary-ray cambium (Fig. 10) consists of nearly cubical cells, though they are sometimes elongated tangentially.

Sections of the bark from a 5-year-old stem were 1.5 mm. in thickness (Fig. 14).

Outer bark—10 to 12 rows of small brown unlignified cork-cells; total radial width 80 microns.

Middle bark—unchanged except for numerous masses of stone cells, usually elongated tangentially, the largest mass being 630 microns, about 20 cells, in this direction. The radial or longitudinal dimension of these stone cell groups seldom exceeds 200 microns, though in one instance a group measured 400 microns. They seldom exceed 8 or 10 cells in these directions. The cell lumen is usually very small, and while pores and stratifications are visible they are not well defined. The walls are strongly lignified.

Inner bark—this is now 1 mm. thick. Occasional groups of unlignified primary bast may still be seen, but many large stone cell-groups have been developed in the outer portion of the inner bark. These groups lie between the medullary rays along with the small groups of first-formed secondary bast. The medullary rays, 1-, 2- or 3-cells wide, are distinctly seen extending back to the cambium. They are from 100 to 300 or 400 microns apart. There were 46 rays in 7 mm. of bark. Between the rays 5 tangential rows of small bundles of secondary bast with crystal fibers were found. In tangential section the bast is in long interweaving strands, 6 to 12 or 14 cells wide, bordering the medullary rays,

the strands separating so as to snugly enclose the ray. The medullary rays are elliptical, ranging in height from 100 microns (8 cells) to 1.5 mm. (100 cells), and in width at their widest part from 30 microns (2 cells) to 90 microns (4 cells). In the majority of cases they are 3 cells wide throughout most of their length, but narrowing to 2 cells, then to 1 cell toward their upper and lower edges.

The phloem contains a few sieve tubes in which the transverse sieve plates could not well be differentiated, accompanied by companion cells and many parenchyma cells. The parenchyma cells are rounded or angular in transverse section, oval in longitudinal section, contain living contents and serve for starch storage. Calcium oxalate crystals, except the prismatic ones in the crystal fibers, are not so abundant in the inner bark as in the middle bark. Occasional rows of rosettes and isolated rosettes and prisms are seen. One isolated prism was noted, measuring 35 microns across, though seldom do crystals of the inner bark exceed 20 microns. The primary crystals of the middle bark, however, attain a diameter of 30 and even 45 microns.

The examination of specimens from the commercial drug gave no new features except a thickening of the inner bark. The thickest piece of bark examined was 8 mm. across. In this specimen the outer bark did not exceed 0.150 mm. and contained 26 rows of suberized cork cells. The middle bark was 1 mm. in width and in 10 sq. mm. contained 34 groups of stone cells, arranged in 4 irregular rows. The inner bark was 7 mm. thick and contained 10 tangential rows of bast bundles. It was noted also that many small groups of stone cells were found associated with the bast in the inner bark (see Fig. 16). Starch was quite plentiful in the medullary ray cells and phloem parenchyma. Rosette aggregates and prisms isolated or in longitudinal rows were fairly abundant and the bast bundles and crystal fibers differed not from previous description.

An unusual specimen was met with, in which the secondary bast was practically absent. The specimen was 5 mm. thick, the middle bark contained stone cell groups and a few such groups were found in the inner bark, but with the exception of a few very small bundles in the outer portion of the inner bark, no bast was found.

It might be said that, on the average, stone cells constitute more than half of the lignified tissue of the drug Rhamnus Purshiana.

The Powder:—The most conspicuous element of the powder is the masses of bast with the associated crystal fibers. These bast masses in commercial powder (No. 60) are often more than 1 mm. in length and usually 2, 3 or 4 cells wide. The individual bast and crystal fibers are distinguished from one another with difficulty in these masses and only occasionally are the completely separated fibers found in the powder. However, the long rows of prismatic crystals show very distinctly, even after the use of the hydrochloric acid in connection with the phloroglucin test. It is to be noted that when a crystal fiber is observed along an edge of the mass of bast, in profile view as it were, the septum walls which are gradually thickened and lignified toward the thickened lignified wall adjacent to the bast are plainly seen. The outer wall is often missing, being pulled off apparently with the adjacent parenchyma cells (Fig. 22). These bast masses are usually free from any adhering parenchyma.

Almost equally numerous are the masses of strongly lignified stone cells, usually dense and of about 100 to 300 microns in each direction. Some smaller groups and some nearly isolated stone cells are found. The crystals associated with the stone cell groups are not nearly so much in evidence as those on the bast masses. In the larger groups the individual stone cells are difficult to distinguish, but in the smaller (Fig. 17), it is seen that in size, shape and markings they correspond to the description already given.

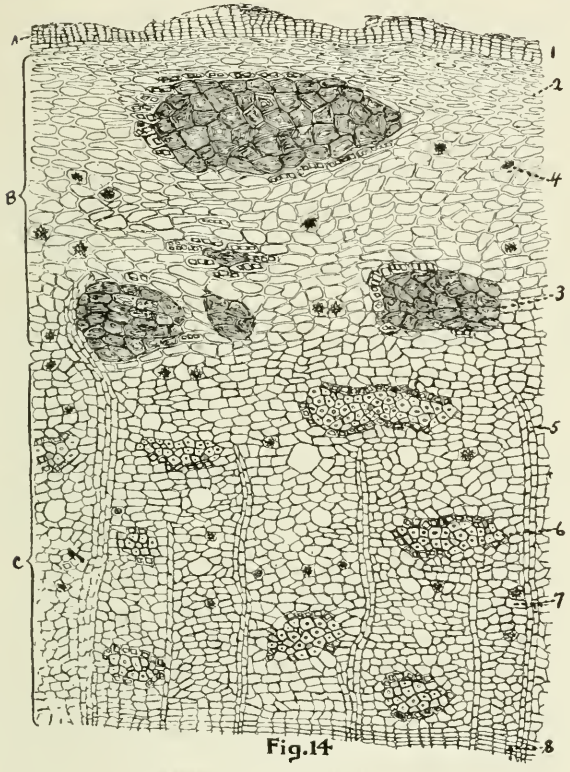


Fig. 14

RHAMNUS PURSHIANA BARK.

Fig. 14.—Transverse section of bark 1.5 mm. thick from a 5-year-old stem. A—outer bark, B—middle bark, C—inner bark. 1—6 to 12 rows of cork cells; 2—collenchyma; 3—group of mature stone cells with accompanying prismatic crystals; 4—parenchyma with occasional rosettes; 5—medullary ray; 6—secondary bast with crystal fibers; 7—phloem consisting mostly of parenchyma with an occasional rosette or isolated prism of calcium oxalate; 8—cambium. (X 150, reduced ⅓.)

Fragments of cork, yellowish or brownish in color, are present. They seldom show the very regular arrangement of the cells in radial rows, but present a surface view (Fig. 18), or are irregular masses.

The bulk of the powder consists of masses of parenchyma tissue. The rather thick-walled collenchyma-like cells of the outer middle bark are occasionally seen, pieces of middle-bark parenchyma with rosettes are quite common, and pieces of phloem parenchyma with fragments of medullary rays in either radial or tangential view are abundant. In these phloem masses the cells of the medullary ray in radial view (Fig. 20) average 20 by 25 microns, while their walls are usually thin and unpitted, though sometimes thicker and pitted. In tangential view (Fig. 31), the rays are elliptical, usually 3 cells wide and 8, 10 or more cells long. The cells are irregular or rounded in shape.

Scattered throughout the mount are numerous free prismatic crystals and rosette aggregates. But seldom does the diameter of the rosettes exceed 20 microns or of the prismatic crystals 15 microns.

The parenchyma cells of the medullary rays and phloem are more or less filled with single spherical starch grains seldom exceeding 4 microns in diameter and without distinctive markings (Fig. 19).

(To be continued.)

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixty-Second Annual Convention

THE HOMEOPATHIC PHARMACOPŒIA OF THE UNITED STATES.

GEORGE M. BERINGER, PH. M.

The appearance of the Third Edition of the Homeopathic Pharmacopœia of the United States, is one of the events of the present year that has received very little consideration in pharmaceutical circles. Homeopathic medicines are dispensed by many pharmacists and, in some localities, to quite a large extent. A knowledge of the basic principles of homeopathic pharmacy and the differences in the methods and practices should be acquired by every pharmacist. A more extended acquaintance with the materia medica of homeopathy is essential to those regularly dispensing such medicines and for these a careful study of the book is necessary. It has been the desire of the homeopathic school of medicine to have the Food and Drugs Act of June 30, 1906, amended so as to recognize this volume as the legal authority and standard for homeopathic drugs. These various considerations all indicate that homeopathic standards are of interest and importance to the drug trade and justify the presentation of this paper.

At the meeting of the American Institute of Homeopathy held in Pittsburgh in 1912, a committee of six homeopathic physicians was appointed to prepare a revision of the Homeopathic Pharmacopœia, the previous edition of which had been published about eleven years prior. The following year, the committee reported the completion of the revision and the publication was authorized and the book has now appeared within about two years after the appointment of the committee.

The promptness with which this committee has completed its work, is certainly very commendable. The impression, however, must not be conveyed that the revision has been made with that thoroughness and aim at scientific exactness that has characterized the revision of the Pharmacopœia of the United States.

A critical examination of the volume shows that but very few pages of the previous revision have been rewritten. The third edition contains 680 pages, the second edition had 674; the additional six pages are accounted for by the introduction of a new table "Showing Percentage of Alcoholic Strength of Tinctures."

The revision has been largely one of bookmaking with the rewriting reduced to a minimum. The preface, historical and introductory notices occupy twenty pages as in the previous edition. The General Pharmacy, containing instructions for making tinctures, dilutions and standards for solvents and diluents, occupies the same space and page for page as in the former edition and with only a few minor changes. Part II is devoted to "Special Pharmaceutics," or the official

homeopathic materia medica and, as in the previous edition, this occupies pages 51 to 596, inclusive.

The admissions have been artfully fitted into the text. Where it became necessary to introduce a new drug the plan commonly adopted was to select a drug for deletion and the page plate cut in such a way as to make the changes necessary with the least amount of type setting. Thus on page 482, Ranunculus Flammula was deleted and Radium Bromide sandwiched in with two other Ranunculi before and two following and thus the strictly alphabetical arrangement was destroyed. On page 532, Spiræa Ulmaria, queen of the meadow, was deleted and Sparteine Sulphate was introduced, following Spigelia and not in alphabetical sequence. As the text for Sparteine Sulphate occupied less space than that previously required for Spiræa, several pages had to be recast, but the printer has minimized the resetting by leaving a blank space for about one-fourth of page 532. These examples serve to show an easy method of pharmacopœial revision.

Ten admissions to the official materia medica are recognized. These additions include a number of medicines more or less used in both schools, such as hawthorn berries, echinacea, white ash bark, thyroid gland, sparteine sulphate, strychnine phosphate and radium bromide. Not the least to be noted as an admission is Mephitis Mephitica, Skunk Poison, the offensive fluid secreted by the anal glands of the polecat.

The deletions are Coriaria ruscifolia, the toot berry of New Zealand, the strawberry, mercurous acetate, mercury black sulphide replaced by the red mercuric sulphide, ranunculus flammula, spiræa ulmaria, strychnine alkaloid and linden flowers still extensively used, especially among the Italians.

The volume reasserts that the essentials of homeopathic pharmacy, are the simplicity or singleness of its preparations and cleanliness. The drugs are never mixed or compounded in their preparation or in their dispensing. In accordance with the homeopathic axiom, only one medicine is used at a time. Each drug in its natural state, after proper comminution, is added to a prescribed solvent for the purposes of extracting and preserving and as a means of dilution. Great stress is laid upon the importance of cleanliness and the most conscientious care in the handling of drugs of different kinds so as to protect them from the vapors, odors and dust of others and storage is to be in cool, airy and darkened places.

Drugs are defined "as substances which have the power of disturbing the health of the living organism." The Homeopathic materia medica is in the main derived from the vegetable kingdom; the plant drugs constitute the majority of the official medicines. Thirty-two of the drugs included are of animal origin of which we are informed "only a few are in common use." The mineral kingdom is the source of many and also some of the chemical constituents of plants as well as some artificial chemical products are included.

The dry crude drug remains "the unit of medicinal strength." The directions of the British Homeopathic Pharmacopœia regarding this is adopted. This reads: "In every instance, the dry crude substance is to be taken as the starting point from whence to calculate its strength, and the mother tinctures contain all the soluble matter of one grain of the dry plant in ten minims of the tincture."

In the preparation of tinctures from fresh plant drugs, the amount of moisture present is determined by drying a weighed portion on a water-bath until it ceases to lose weight. Allowance for the percentage of water so determined, is to be made in the preparation of the menstruum. For the extraction of drugs either maceration or percolation is permissible. The former process is "recommended for gummy, mucilaginous substances and those plant drugs having much viscid juice."

It is to be observed that the mother tinctures thus made correspond to the first decimal dilutions (1x). The decimal system of dilution, that is one part of the drug or tincture to nine of diluent, is adopted as the standard and scale of attenuation and notation; so each successive dilution or trituration contains one-tenth as much of the dry substance as the preceding dilution or trituration. The older method of dilution recommended by Hahnemann and adopted for many years by his followers, was the centesimal scale, where each attenuation contained 1/100 part as much of the drug substance as the preceding attenuation. The decimal scale "affords less opportunity for the loss of curative opportunities or 'chances' than the other."

The solvents and diluents employed in homeopathic pharmacy are few and are tersely treated in "Part I, General Pharmacy." The descriptions, properties and tests are not stated with that positive exactness that is observed in other modern pharmacopœias, and the critic will note their insufficiency. Distilled water has no test for limit of ammonia or nitrous oxide. No ash limit is fixed for sugar of milk. Half of an ounce of a hot saturated solution (aqueous)? of milk-sugar is directed to be added to an equal quantity of sodium hydrate to saturation, in order to show the inverting power of alkalies on lactose and subsequent reduction of copper solutions. A few cubic centimeters will be all that a chemist would require to make such tests. Under tests for alcohol it is stated "that when one volume of alcohol is mixed with half its volume of test-solution of potassium hydrate, the liquid should not at once become dark-colored; the non-appearance of the dark color will prove the absence of aldehyde, methyl alcohol or tannin." No other test is given and this certainly could not alone be accepted as a discriminating test for the presence or absence of methyl alcohol.

The directions regarding prescriptions are short and commendable. It is stated that the writing of prescriptions falls exclusively within the duties of the physician; he should exercise the greatest care and exactitude in giving his instructions to the pharmacist who is to be governed by them; not the slightest doubt should exist concerning the physician's directions; the name is to be plainly written, preferably, in Latin; the form should next be stated, that is tincture, dilution, trituration; the dosage form and number of doses should be explicitly given; and the dose and frequency of repetition should be plainly written under the head of "Signa." "Abbreviations facilitate the writing of prescriptions, they do not add to their intelligibility and hence should only be used in strict obedience to rules of abbreviations."

The presentation of the monographs in Part II follows the following general form:— Official title in Latin, Official English title, natural order, if of animal or vegetable origin; Synonyms, Latin, English and Foreign; Description; Habitat; History; Part Used; Preparations.

In those drugs that are considered as very active poisons, "requiring special caution on the part of physician and pharmacist," there is introduced in the paragraph "description," a maximum dose statement. Thus in Acidum Carbolicum, "A poison, maximum dose 2 grains highly diluted with water." Under Acidum Hydrocyanicum, "An active poison, maximum dose of 2 *per cent.* solution, 10 Minims." Under Arsenicum Album, "An active poison, maximum dose 1/12 grain, not to exceed 1/6 grain per day."

As by far the larger percentage of homeopathic materia medica is of vegetable origin, one would reasonably expect to note in this revision a decided improvement in the botany and pharmacognosy. In this we are sorely disappointed as only a few unimportant changes have, here and there, been made. From the studies of botanists and pharmacognocists for many generations, there has accumulated a mass of facts regarding the limitations of botanical families, genera and species; the botanical synonomy; the correction of names and errors of earlier botanists who frequently worked with insufficient materials; the sources of drug and food materials; the structural and anatomical characteristics of plants and drugs, etc. Little, if any, reference seems to have been made by the revisers to this storehouse of available knowledge, and even the work of systematic botanists on our native flora appears to have been neglected, as well as that on the foreign.

The Latin title given to a drug of vegetable origin is commonly the botanical binomial of the plant. As a rule, such titles are quite appropriate, but for others their validity is questionable. As examples, *Guaiacum Officinale* with the synonyms *Lignum guaiaci, Lignum vitæ, Bois de gayac* and *Guaiaholz* for Guaiac Resin, and *Croton Tiglium* for Croton Oil, which could readily have been placed with the other oils, such as cod liver and castor oils and oils of cajaput and sandal wood.

The determination to adhere closely to the rule to retain as the Latin title the name under which the drug was introduced into homeopathic literature, has led to the continuation of a number of names that should long since have been discarded. Some of these perpetuate old errors and of others it would be quite difficult to trace their history or connection with the drug. The "mephitic and alliaceous" skunk cabbage is a characteristic illustration. The title given is Pothos Fœti*dus*. Presumably this goes back to the Pothos fœtid*a* of Michaux; but it was early recognized that this plant was very distinct and Nuttall and other botanical contemporaries of a century ago pointed out that this plant could not be classified with the tropical American plants of the genus *Pothos*, nor with *Linnæus Dracontium*, and so Nuttall classified it under Salisbury's genus *Symplocarpus* and *Symplocarpus fœtidus* is the name that was commonly used by botanists for a century. It is now known that Rafinesque had even prior to Nuttall ascribed this plant to a properly described genus *Spathyema*, a name that is very appropriate and has been accepted by Britton and Brown and the more recent systematists as the correct name in accordance with the rules for botanical nomenclature. Yet the correct name, *Spathyema fœtida Raf.*, is not given even as a synonym.

The subject of Synonyms is admittedly a difficult problem and should be given

consideration in a pharmacopœia primarily for the purpose of determining standards, for defining exactly to what drugs the names are to be properly applied. The treatment here is such as to perpetuate many errors that scientists have long since corrected or buried and to create innumerable questions and doubts as to standards and what it is intended to include under many of the official titles. The revision has done absolutely nothing toward clarifying this confusion and jumble of the former editions.

Under the title of "Synonyms," numerous binomials are given, but in no instance is the authority for the name given. Any one who has paid the least attention to systematic botany, knows how dangerous is such a practice. The same name has not unfrequently been employed by one botanist as well as by different botanists to plants that were later differently classified and properly named. To continue to perpetuate such erroneous and misleading synonyms in a work on drug standards that seeks recognition as a legal authority, is inexplicable.

The few examples of this treatment of botanical synonomy permitted by space, will suffice to exhibit what I consider the grave defect common throughout part II. Under Aloe Socotrina are given as synonyms names that are with proper authority considered the sources of East Indian, Barbadoes and Cape Aloes.

Belladonna has twelve binomials given as Latin synonyms: two place it in genus atropa, two in the genus belladonna and eight different solanums would include it in that genus.

Chamomilla with nine Latin synonyms with six genera named, with *Matricaria Chamomilla Linne,* which alone would have definitely fixed a standard, given next to the last.

Cimicifuga has nine English synonyms in addition to twelve Latin which classify it with the following genera: Cimicifuga, Actæa, Botrophis, Christopheriana and Macrotys.

Cina (Santonica) has eighteen Latin synonyms, twelve of which are binomials and would recognize four species of absinthium and eight of artemisia. There is certainly need for a more definite statement here as some of the species of artemisia named contain no santonin and others very little.

Cinchona Officinalis, or China with Peruvian Bark as an English synonym. The Latin synonyms given are mostly those of plants that many years ago were considered as possible sources of commercial varieties of cinchona. The change in source due to the extensive cultivation receives scant consideration. *C. succirubra* is named in the text though not included in the synonyms, but *C. Ledgeriana,* Molus, is not mentioned at all. It was to the study of the effects of Cinchona that Hahnemann attributed his discovery of the "law of cure."

Cistus Canadensis—Frostweed. Here one notes a veritable confusion. The genus is Helianthemum and not Cistus as given in the title. The synonyms given include *Lechea major,* which title is properly applied to our common pin weed *Lechea major Mich.,* an entirely different plant.

Digitalis Purpurea—Campanula sylvestris is the first stated synonym. Is it not time that such an error as the naming of a scrophulariaceous plant of the genus Digitalis as belonging to the Campanulas should be forgotten?

Hyoscyamus Niger—The synonyms given include H. agrestis and H. flavus, two of the European species that have been noted as sophistications occasionally collected and admixed with the official hyoscyamus.

Illicium Anisatum—Star Anise. In this monograph, nine binomials are given, yet the uncertainty of the source is evidenced in the statement under History carried over from the previous revision, "although having many synonyms it is doubtful if star anise is the product of all." The intent is doubtless to describe the innocuous drug star anise, but both in the title (Illicium Anisatum) and among the synonyms (Illicium religiosum) is the poisonous star anise designated. The revisers were probably not aware of the study made in 1888 by J. D. Hooker, who determined that the true star anise was obtained from a species he named Illicium verum and that I. anisatum Linnæus and I. religiosum Siebold were different names for the plant yielding a false and poisonous substitute for the true drug.

Scilla Maritima—Squill. The binomials given would classify this plant as coming from the following genera: Cepa, Ornithogalum, Pancratium, Sancratium, Scilla, Squilla, and Urginea.

It is difficult to understand how with such misleading synonomy that purity and singleness of the drugs that it is claimed as so essential to homeopathic pharmacy, can be assured.

The animal drugs include quite a variety, some few of which are common to both schools. Among these may be mentioned Animal Charcoal, Cantharides, Castor (formerly official in the U. S. P., 1870), Cochineal, Musk and Cod Liver Oil. The Honey Bee supplies two titles, that of the Apis Mellifica or Honey Bee with directions for making a tincture from the live bees, and the Apis Virus, being the Honey Bee Poison, with formula for making a trituration from the extracted stings. The Star Fish, Red Coral, Fresh Water Sponge, the juice of the Purple Mollusk and Sepia, the dried inky secretion of the Cuttle Fish, are some of the oddities in this group of drugs.

Among snake poisons are given Crotalus, the Rattlesnake venom, the use of which hypodermatically as a cure for epilepsy has been recently exploited in general practice; Elaps Corallinus, coral snake; Lachesis or Viper; and the Naja Cobra venoms.

From the Spiders we have Aranea or Diadem Spider, Mygale or Bird Spider, the Tarantula, of which two distinct titles and species are named, the Spanish and Cuban, and the Theridion or Black Spider of Curacoa.

In the treatment of chemicals, one notes that the tendency has been to follow what has been called the "bob-tail" spelling, that is, using the termination "id" for Chlorides and Bromides, and "fate" for Sulphates. Yet even here there is a lack of consistency. Radium Brom*ide* is found with the "ide" termination, and Sparteine Sul*phate* is with the "phate" termination. Yet Cinchonine Sulphate is Cinchon*in* Sul*fate*. In some of the alkaloids, the U. S. P. rule of terminating alkaloidal names in "ine" has been followed. In others, it has been forgotten. For examples, Cinchon*in* Sul*fate*, Eser*in*, Bebeer*in*, Apomorph*in* Hydrochlor*id*, Pilocarp*in* Hydrochlor*id*. Others are spelled with the "ine," such as Codeine, Hydrastine, Morphine, Narceine, Narcotine, Caffeine, Brucine, Atropine, Atropine

Sul*fate*. In some of the Quinine salts, the Quinine is spelled with "in," the others with "ine" terminations, and for some reason Santonin has been changed to Santon*ine*.

Some of the Latin titles given for chemicals and mineral products are simply the English without any attempt at latinizing. For example, Borax and Petroleum.

Throughout the chemical monographs the molecular weights have been corrected on the basis of the recent international atomic weights, but through some oversight there is left in the book (page 606), the old table of atomic weights based on H = 1 and O = 15.96, and so we have here again a dual standard for atomic weights and calculations of molecular weights.

There is no attempt at assaying any of these chemicals. In the descriptions the strength of standard is sometimes mentioned, but these descriptions are not always of the medicinal article. Acid Hydrocyanic is accompanied with a description describing an acid which boils at 27° and congeals at 15°. Here the attempt is evidently made to describe the pure Hydrocyanic Acid, yet it is subsequently stated that 2% acid is to be used in making the dilutions and the dose given is for the 2% acid.

Throughout the chemicals the United States Pharmacopœia standard is frequently referred to, sometimes properly and sometimes without recognizing the changes that have taken place in the more recent editions of the U. S. P. Under the title of Ferrum Carbonicum, Saccharated Carbonate of Iron, the process of the U. S. P. VIII is designated. Under the title of Ferrum Iodatum, the synonym of Saccharated Iodide of Iron, a formula is attached credited to the U. S. P. without date. The formula for that preparation, however, is that which was included in U. S. P., 1890. Under the title of Ferrum Muriaticum, there is given a formula for the preparation of Solution of Ferric chloride, U. S. P., but here the formula of the U. S. P., 1890, is retained without noticing that the U. S. P. VIII (1900) reduced the Iron content of this solution from 37.8% Ferric Chloride to 29%.

It is to be noted that throughout the book, formulas are only given for the preparation of Tinctures and Triturations with their dilutions and attenuations. No mention is made of other forms of medications that are used in homeopathic pharmacy, such as liniments and ointments and for which standard formulas should be included in a pharmacopœia.

Part 3 of the book is devoted to select tables for reference. The first of these is the list of signs and abbreviations used in prescription writing. Another useful table is that of the list of medicines with the pronunciation of the titles correctly indicated.

SENSITIVE TEST FOR IRON.

A little hydrazine is added in order to reduce ferric to ferrous iron, or to prevent oxidation of ferrous salt. To 50-70 mils of the solution a little saturated alcoholic dioxime solution is added. If the smallest traces of iron are present the liquid becomes intensely red.—L. Tschugaeff and B. Orelkin (*Zscht. Anorg. Chem.*, 1914).

Editorial

Ernest C. Marshall, Acting Editor..... 63 Clinton Building, Columbus, Ohio

THE FUTURE.

THE question of what is to be the pharmacy and the pharmacist of the future is one most interesting, naturally, to all the members of our profession. The changes which have come within its practice within a few short years, have caused us to deeply consider the question, What is to be the outcome to Pharmacy of all this apparent radical, this ultra change in ambition and in development?

Of course it is folly to regret this change. Mutation is inevitable in all things. Everywhere there is a constant evolution or devolution in progress, from which metamorphosis must result and which we must inevitably encounter and for which we must be prepared.

It has seemed always to be the desire of man to produce something immutable. The Pharaohs, when they built their pyramids and placed within them their sarcophagi, wished to build for all time and vainly thought they could there rest until the last day. The priests of all the ancient religions, of the Temples of Vesta and Mars, of Jupiter and Saturn, the very altars of which stand unworshipped in the Forum of to-day, all thought the faith they revered was to endure till the end of time. In all things we must anticipate a change, and hold ourselves in readiness to guide that change rightly and for the good of all.

We fear to break from the established course; we do not like to be forced from our accustomed surroundings; we know the evils we have, but know not those which may come to us under new conditions, when we cut adrift and sail out over the unknown and uncharted seas.

From the days of Accad, of which we get our first mention in Genesis, the science of Pharmacy has been in constant process of evolution, and through the chiliads of years, since that time, there has been a constant, never-failing change, progression and regression, like the ever-moving waves upon the ocean's bosom; the tides upon the shingly beach.

So knowing the absolute certainty with which changes are to come, it is for us to seek,—not to retain the old conditions, the old ways and the old methods,—but to boldly and resolutely strive to make these changes such as will elevate and uplift the science and the art of which we are the disciples.

To the ordinary mind it would almost seem that Pharmacy, as we knew it, that of the olden time, had so radically changed that but slight connection existed between that and the art of Pharmacy of to-day. But these changes are but of the surface. Pharmacy is to-day as it has always been since the days of Babylon and Nineveh and the cuneiform prescriptions, the science and the art of preparing medicines for the healing of the sick. And so it will continue to be until the end of time. The "Telinon" and the "Mendesium" of the ancient Egyptians were

prepared in the same way as our ointments are prepared at the present time. And when Macaulay's traveller from New Zealand "shall in the midst of a vast solitude, take his stand on a broken arch of London Bridge to sketch the ruins of St. Paul" then will Pharmacy be still existent, ministering to the ills and woes of Humanity.

With such a prospect before us we should simply look upon the aberrations of the pharmaceutical horologe as only most ephemeral. We are passing through what we might term the "Dark Ages" of Pharmacy; a pharmaceutical regression, from which Pharmacy will emerge purified and better. It is impossible for Pharmacy to permanently move backward. It is a science and as such it can never die. The soul, the essence of Pharmacy, is its knowledge of drugs which makes it useful to mankind. Surround it as you may with Commercialism; adulterate its pure stream as you will with baser things, yet above all, there must come a time, when these things will pass away and the pure bright light, radiating from its torch, will shine forth in undimmed radiance. This time must come, for

> "Knowledge is now no more a fountain sealed;
> Drink deep until the habits of a slave,
> The sins of emptiness, gossip and spite,
> And slander die. Better not be at all
> Than not be noble."

And it is to make Pharmacy noble and great that we should dedicate ourselves.

How can we do this? By making ourselves noble and great. By adding to ourselves each day something of knowledge which will all tend to the uplift of our profession, to the making of that profession noble.

The Pharmacy of America is determined by the character of its fifty thousand pharmacists, and upon us depend the question whether it shall be noble or ignoble, base or true.

In this work the American Pharmaceutical Association must take a leading part. It should keep its face steadily toward the rising sun of progress and, putting aside all base and lowering tendencies it should uphold the dignity, the purity of Pharmacy and its aims.

> "Once to every man or nation, comes the moment to decide,
> In the strife of truth with falsehood
> For the good or evil side."

And it is for us, at this moment to decide that Pharmacy shall be noble, shall be pure, shall be true to itself and to its traditions.

Let every one of us gird himself to this work. Let us highly resolve, each day that we as pharmacists will be better, more noble and more skilled, and we will do our part to make of Pharmacy what we all desire to see it,—not merely an end to the attainment of worldly wealth, but a means of serving humanity better, more wisely and well.

THE UNSOLVED PROBLEMS OF CHEMISTRY.

A NUMBER of years ago Prof. Ira Remsen of the Johns Hopkins University wrote a most entertaining paper on the above subject and to-day the questions to which it called attention are as involved as they were at that time. There still remain these unsolved problems which some day we may hope to master, but which, at the present time, are as difficult and impossible for us to solve as is the *pons asinorum* to the primary student of arithmetic.

Who can tell us definitely what becomes of the sugar we dissolve in our daily cup of coffee or tea? We say it is in solution, but what is the meaning of that term? We can recover it from that solution to be sure, but in what form is it while it is in that solution. People said the apple "fell," but until Newton no one knew the universal law, which acts on the mightiest of suns and the tiniest of sands; which holds Boötes and Sirius and the Great Bear in their fixed places in the everlasting heavens.

We speak of elements, what are they? Things impossible to simplify? No, things it is impossible for us to break up, that is all. What we know is but little more than Boyle knew when he wrote his Scyptical Chymist in 1660 and then the four elements, earth, air, fire and water, were the last words of science on the elementary things of the world.

If the Cosmos is the result of evolution, as scientists tell us, then all the elements must have had a common origin. If all life comes through the protoplasm and the protozoa, then a common source must exist for all living organisms. But of all this we have not the faintest knowledge. The diamond and the graphite of the lead-pencil are the same element we are told. Both pure carbon. If so why do they differ? Why should the one be hard and the other soft, one translucent and one opaque, one conduct electricity slowly and the other with facility?

We think we know all about water. We know its constituents, hydrogen and oxygen, but why does it dissolve as much chloride of sodium at 32° as at 212° when it dissolves much more of other substances at the higher temperature? Why does it suddenly expand when it freezes?

To many of these and like other problems the pharmacist has an introduction and it is to the credit of the profession that some of the greatest advances in chemistry came through the humble pharmacist's apprentice. Scheele entered the drug-business at the age of thirteen and Baron Liebig began his apprenticeship in a drug-store at fifteen. And so to these unsolved problems of chemistry we invite the attention of all pharmacists. Study and thought are the essentials of all advance. Not alone the study of books, but the study of things and these things are immediately under the eye of the pharmacist. To every boy entering the drug-business to-day the opportunity is offered to solve some of these problems and mark a step in the world's advance.

Book Reviews

DIGEST OF COMMENTS ON THE PHARMACOPOEIA OF THE UNITED STATES OF AMERICA (VIII) AND ON THE NATIONAL FORMULARY (III) for the calendar year ending Dec. 31, 1913 by Murray Galt Motter and Martin I. Wilbert, Bulletin 98, Hygienic Laboratory.

It is with pleasure that we can say in all sincerity that this Manual should be in the hands of every pharmacist who is truly a pharmacist, in this country.

There is not a page in the book but what is of interest to all those actively interested in the drug-business in any department. While there is much in the book that is alien to its title, yet no fault can be found with a line of its contents which are well-selected and well-arranged to impart useful knowledge to druggists regarding many points upon which they may need information.

It is more than its title would signify. It is really a Review of the field of Pharmaceutical literature for the year, which in any way has a bearing on the intent or the contents of the U. S. P. and N. F. Instead of being devoted to the past alone it is of the present that it presents a picture and it contains in its pages a wealth of information which, if utilized, cannot fail to elevate and improve the practice of pharmacy and to furnish valuable information to every pharmacist.

Any one who examines the publication will be surprised at the amount of information it contains upon all subjects connected with the practice of Pharmacy and we urge our readers to secure this book in order that they may be advantaged by the information contained within it.

It would be most regrettable for any druggist not to take advantage of this knowledge, so freely offered. Subjects are treated briefly but the references it contains allow any one to easily consult the source of the knowledge upon which he may desire further information.

The book might very well be termed an Annual of Pharmacy of the United States and merit well the more comprehensive and desirable cognomen.

TESTS FOR VANILLIN.

Vanillin gives with certain classes of organic substances typical color reactions under the influence of hydrochloric or sulphuric acid. The observations made with amines, acid amides, and imines (where the color becomes yellow), and with phenols (where the color becomes red and violet) give hope that with other classes characteristic colors may also be produced. Many of the tests referred to may also be used in cases in which a positive result with phenylendiamin, phloroglucin, or resorcin is reckoned to be insufficient.—E. P. Häussler (*Zscht. Anal. Chem.*, 1914).

Contributed and Selected

REPORT OF THE CHEMISTS' SUB-COMMITTEE ON STANDARDIZATION AND DRUG TESTING.

The General Committee on Standardization and Drug Testing have requested that we investigate methods of analysis for Elixir Lactated Pepsin, nitroglycerine, diastase and papain preparations.

Each of these problems has received our most careful attention. All of the methods herewith recommended have been tested in our laboratories. We present them to you as being the most efficient known to us at this time.

ASSAY OF ELIXIR OF LACTATED PEPSIN.

Since the different pharmaceutical houses market this preparation in various strengths, it is impossible for us to describe other than a general method. We suggest that you take of the elixir, a quantity containing approximately 0.1 gram of pepsin. Dilute this to 150 cc. with a solution of 9 cc. dilute hydrochloric acid (U. S. P.) in 291 cc. distilled water. Proceed from this point directly as outlined in the Pharmacopœia of the United States, Eighth Revision, under the Assay of Pepsin, page 335. It will be found that the other ingredients present in the original elixir will not interfere with the pepsin digestion in the dilution above recommended.

We believe the pepsin assay to be the best method of testing the activity of this elixir. However, we also strongly recommend that you estimate the alcohol contents of each and every lot, since it is advisable to verify the statements of alcohol percentage made on the label.

As you well know the methods of alcohol determination in general practice today, are still more or less inaccurate. We believe that the forthcoming Pharmacopœia is to give us an official method. This will be welcomed by all. Meanwhile we suggest that you employ the distillation-method described in Leach's "Food Inspection and Analysis," 1911 edition, page 658.

ESTIMATION OF NITROGLYCERIN.

Two determinations are necessary, one on the original supplies and the other on the finished products. There are available, two types of raw material, one an alcoholic solution and the other a trituration of nitroglycerin with some inert material such as milk sugar. Likewise the finished products are of two types, the alcoholic solution and the tablets.

Engelhardt (Journal of the American Pharmaceutical Association, 1913, page 163,) states that rather accurate results are obtained in the assay of alcoholic solutions of nitroglycerin by evaporating a measured sample spontaneously and drying the residue in a desiccator over sulphuric acid to a constant weight. We are told that this method has been approved as the official assay of the new Pharmacopœia. You will find full details on page 527, Journal of the American

Pharmaceutical Association, year 1914. You may, however, also proceed as described later under the estimation of tablets and triturations by diluting the alcoholic solution to a definite volume with ether in a manner as suggested under the "Preparation of Sample."

As you know, the Department of Agriculture has recommended two colorimetric-methods for the assay of nitroglycerin, the Modified Scoville and Modified Hay methods. For the estimation of both the original trituration used for manufacturing, and the finished tablets we can only repeat their method. We take exception, however, to their method of extraction by macerating the tablets or trituration under ether and using this ether-extract for the determination. There is no doubt but that this method will exhaust a good hypodermic tablet. However, it has been clearly proven by Dr. Thorburn of the Pitman-Moore Company and verified by Mr. Summers in the Laboratories of The Abbott Alkaloidal Company, that this method does not completely exhaust compressed tablets, granules or poorly made hypodermic tablets. It therefore seems advisable to us to recommend Dr. Thorburn's extraction-method in preference to the maceration-method.

ESTIMATION OF NITROGLYCERIN IN TABLETS OR TRITURATION.

Preparation of Sample (Thorburn Modification):—Disintegrate a quantity of tablets or trituration containing about 0.0162 gram (¼ gr.) of nitroglycerin in 20 to 25 cc. of water. Extract four times with successive portions of 25 cc. of ether. Combine ether extracts and make up to 100 cc. in a volumetric flask. Then proceed by either of the following methods.

Estimation by the Modified Scoville Method:—Of the above ether solution place 40 cc. in a carefully dried and tared 50 cc. beaker. (A second aliquot of 20 cc. may be used as a check.) Evaporate the solvent in a vacuum desiccator. Apply the vacuum gradually so as to prevent ebullition. Leave the beaker in the vacuum 30 minutes after the ether has evaporated. Weigh and calculate ether extract per tablet. Treat the residue with 2 cc. phenoldisulphonic reagent, rotating the beaker in such a way that the reagent comes into contact with the entire inner surface. After 10 minutes add water and wash into a 100 cc. flask. (If a check analysis as suggested was made, wash this into a 50 cc. flask.) Dilute to the mark and place 10 cc. (representing 1 tablet) in a 100 cc. flask, add about 50 cc. water and a few drops more potassium hydroxide solution (20%) than is required to neutralize the acid. (Do not use sodium hydroxid.) Dilute to the mark and compare the color with that produced by a standard nitrate solution similarly treated. Use any convenient colorimeter or Nessler tubes.

Reagents and Standards:—

Phenoldisulphonic Acid Reagent:—Dissolve 25 grams of pure white phenol in 150 cc. of concentrated sulphuric acid, add 75 cc. of fuming sulphuric acid (13% So_3), stir well and heat for two hours at about 100 degrees.

Standard Solution:—Dissolve .7217 gram pure KNO_3 in 1 liter of water. Evaporate 10 cc. of this solution just to dryness on the steam bath. Cool and treat the residue with 2 cc. phenoldisulphonic acid reagent, observing the precautions noted above and using a glass rod if necessary to aid the solution of the

residue. After 5 or 10 minutes dilute to 250 cc. Each cc. of this solution contains .004 mg. nitrogen. Add an excess of KOH solution to an aliquot of this solution and dilute to 100 cc. It is advisable to prepare a standard of approximately the same color as the unknown. Nitroglycerin is 5.4 times nitrate nitrogen.

Estimation by the Modified Hay Method:—Of the above described ether extract place 10 cc. in 120 cc. Erlenmeyer flask, dilute with 5 or 10 cc. alcohol and add about 5 cc. of ½% alcoholic potassium hydroxid. Cover with a watch glass and allow to stand 10 minutes. Place on steam bath, allow to boil, remove the watch glass, and when most of the liquid is evaporated, add about 25 cc. water and leave on steam bath until the odor of alcohol can no longer be detected. Cool and dilute to 250 cc. Each cubic centimeter of this solution represents .01 of a tablet. Introduce 5 cc. representing .0324 milligram nitroglycerin into a 100 cc. graduated flask, dilute with sufficient water to make the volume 90 to 95 cc., add one drop concentrated hydrochloric acid, then 2 cc. sulphanilic acid solution and 2 cc. napthylamine hydrochloride solution. Complete the volume with water. Prepare at the same time and in the same way, standards containing known amounts of sodium nitrite, by taking 80 cc. of the standard solution of sodium nitrite, and adding one drop of concentrated hydrochloric acid, 2 cc. sulphanilic acid solution and 2 cc. napthylamine hydrochloride solution, and completing volume to 100 cc. with water. Stopper the flask and mix well. Compare the colors after 30 minutes, each cc. is equivalent to .00064 mg. nitroglycerin.

Reagents and Standards:—

Sulphanilic Acid Solution:—Dissolve 1 gram in 100 cc. of hot water.

Napthylamine Hydrochloride Solution:—Under a hood boil .5 gram of the salt with 100 cc. of water for 10 minutes, keeping the volume constant. Filter and keep in a glass-stoppered bottle.

Standard Solution of Sodium Nitrite:—To a cold solution of about 2 grams of sodium or potassium nitrite in 50 cc. of water, add a solution of silver nitrate as long as a precipitate appears. Decant the liquid and thoroughly wash the precipitate with cold water. Dissolve in boiling water. On cooling the silver nitrite is precipitated. Dry the crystals in the dark at the ordinary temperature (preferably in a vacuum). Weigh out 220 milligrams of the dry silver nitrite, dissolve in hot water and decompose with a slight excess of sodium chloride. When the solution becomes clear, dilute to 1 liter. Dilute 5 cc. of this solution to 1 liter. This second dilution is the standard to be used. It contains 0.0001 mg. nitrite per cc. Only nitrite free water should be used in the estimation by the Modified Hay method.

Of the above methods the Scoville is more generally employed because of the rapidity with which it can be operated. It is to be remembered, however, that both of the above methods involved a colorimetric comparison, and that different operators are better able to judge one color in preference to another. As you well know, the Scoville method gives a yellow-colored solution while the Hay method yields a rose-colored solution. We suggest, therefore, that you try both methods on a known standard and then adopt the one that gives the most consistent results. So far as accuracy is concerned, outside of the end color comparison neither method is to be preferred over the other.

This committee most emphatically reiterates Mr. Baker's statements to you of a year ago that nitroglycerin tablets when properly bottled do not deteriorate on standing. During the past year, we have tested monthly a specimen lot of tablets. These tablets are to-day as potent as they were one year ago.

All that is necessary is to devise a method of manufacture which will give a product true to label, then bottle properly.

DIASTASE.

As you all probably know, diastase is to be official in the forthcoming Pharmacopœia. We are also to have an official method of assay. The provisional method has already been described on page 15 of Part 1, First Proof, United States Pharmacopœia, Ninth Revision.

As Mr. Baker of the Norwich Pharmacal Company, has closely studied this method for the committee, we deem it best to quote his complete report on this subject.

"Comparison and Criticism of Two Methods for Determining the Starch Converting Power of Diastase."

"I will represent the method proposed for the pharmacopœia, ninth revision, as method (a) and the method used by the N. P. Co. as method (b). This method is taken from, but slightly modified, to the one adopted by the Council of Pharmacy, A. M. A., as printed in the Journal A. M. A., Vol. 51, No. 2, Page 142.

"Method (a) is as follows: Mix a quantity of potato starch which has been purified as described under Pancreatinum, equivalent to 5 gm. of dry starch, in a beaker with 10 cc. of cold distilled water. Add 140 cc. of boiling distilled water, and heat the mixture on a water-bath, with constant stirring for 2 minutes, or until a translucent uniform paste is obtained. Cool the paste to 40° C. in a water bath previously adjusted to this temperature and add a solution of 0.1 gram of Diastase in 10 cc. of distilled water at 40° C. just previously made. Mix well and maintain the same temperature for exactly 30 minutes, stirring frequently, when a thin, nearly clear, liquid should be produced. At once add 0.1 cc. of this liquid to a previously made mixture of 0.2 cc. of tenth-normal iodine V. S. and 60 cc. of distilled water. No blue nor reddish color should be produced.

"Method (b). A clean grade of potato starch is thoroughly washed and carefully dried at a low temperature and finally at a higher temperature to about a 10% moisture content. The exact moisture content to be determined in a separate experiment. For the test enough of the starch is taken (about 11 gms.) to make to 500 cc. of an exactly 2% (anhydrous) starch content. The boiling of the paste should be continued for 10 minutes with constant stirring to keep from burning. For each test quantities of exactly 25 gms. of the paste are weighed in a series of 250 cc. flasks placed in a water-bath and kept at a temperature of 40° C. The Iodine test solution is made by dissolving 2 gms. of Iodine and 4 gms. of Potassium Iodide in 250 cc. of distilled water, 2 cc. of this solution is then diluted with pure water to make 1000 cc. The diastase solution is made by dissolving or suspending 0.2 gms. of diastase in 100 cc. of distilled water. The solutions are used in the following way: Definite volumes of the solution are added to the different flasks containing the starch solution and the mixtures are well shaken. The volumes added may be as follows: 4 cc., 4.5 cc., 5 cc., 5.5 cc., 6 cc. In eight minutes tests are begun by removing volumes of 5 drops from each of the digesting mixtures by a pipette and adding this to 5 cc. of the dilute Iodine solution in a clear white tube standing over white paper. If at the end of 10 minutes drops from one of the flasks fail to give the Iodine reaction, we are ready for the more accurate test; for example, the flasks containing 5 cc. diastase solution did not respond to the Iodine reaction, but the one containing 4.5 cc. did, then a second test would be carried out under exactly the same conditions as the former using 4.6, 4.7, 4.8, 4.9 and 5 cc. diastase solution to 25 gms. of the starch paste. The diastase solution must be of the same temperature as the starch paste. The test is carried to the loss of all color. The diastase solution should have been just previously made and, if working for any length of time, fresh solutions should be made from time to time, as aqueous solutions of diastase are very unstable and soon lose their power of conversion. The dilute Iodine solution should not be put in the tubes until just before it is needed.

"A good diastase will convert at least 50 parts of starch to a colorless end point in 10 minutes. While this method is a 10 minute and the other method a 30 minute one, both methods checked on the diastase under examination as the following figures will show.

Method (a)			
Diastase parts.	100% starch to colorless end point parts.		Time.
" 1	"	40	10 minutes
" 1	"	50	15 "
" 1	"	55	22 "
" 1	"	60	30 "

Method (b)			
Diastase parts.	100% starch to colorless end point parts.		Time.
" 1	"	40	6 minutes
" 1	"	50	8 "
" 1	"	60	10 "
" 1	"	70	13 "

"The fact that the 10 minute method gave the same results as the 30 minute method is due to the vast difference in the strength of the Iodine solutions used. In method (a) we have 0.00254 gms. of Iodine in 60 cc. of water, while in method (b) we have but 0.00008 gms. in 5 cc. We, therefore, have 32 times more Iodine present in method (a) than in (b) and this will give a reaction with the starch diastase solution when the weaker one will not. This condition exactly counteracts for the difference in time for the two methods.

"Method (b) has a few important advantages over the one proposed for the U. S. P. 9th revision. The first and most important point is that when the starch paste is once made, twenty tests may be made from the 500 gms. With method (a) we are using a cumbersome amount of starch paste for each individual test and the test simply shows whether or not the sample tests are up to the U. S. P. standard and to find the exact value of the diastase will require probably several tests, which will make a very tedious task, making and cooling such large individual quantities of starch paste and the individual weighings of the diastase and also the longer period of time for each test.

"The second important point is the end point for the two methods used. In method (b) the end point is very delicate and cannot be mistaken as 5 cc. of the dilute iodine solution in a Nessler tube appears nearly colorless, and any blue, red, or yellowish color which may be produced can be detected with sufficient accuracy. In method (a) the solution is quite highly colored with free Iodine. The directions state to add 0.1 cc. of the starch diastase solution to the 60 cc. of the Iodine solution and no blue or reddish color should be produced. While there are no instructions calling for this, a careless or thoughtless worker might shake the tube slightly and disseminate a red color that is actually produced, so that it would be impossible to be detected. This allows a chance for a sample to be reported up to standard when possibly the starch is only taken to the dextrose or maltose stage.

"Both methods call for potato starch. While potato starch will give a higher value for diastase, and this may seem as a case of lowering standards instead of raising them, I am in favor of its use, because of the physical characteristics of the two. I have always been able to prepare a much more uniform paste from potato starch than from corn starch and would prefer raising the standard to 1/60 or 1/70 and still use potato starch."

The above discussion comparing Mr. Baker's modified method to the proposed pharmacopœia method is entitled to your profound consideration. As has been pointed out, Mr. Baker's method enables you to easily determine the exact strength of your diastase, while the proposed method for the Pharmacopœia is little more than a qualitative method. We believe that this Association should adopt Mr. Baker's assay for their official method. We also deem it advisable for the Association to send a copy of Mr. Baker's report to Prof. Remington, Chairman of Revision Committee, for his further consideration as a better method for the new Pharmacopœia, for it is well to remember that no matter how poor a method may be, should it be included as the official method in the forthcoming Pharmacopœia, the Association members will be compelled to adopt it in their laboratories. The time has come when the Pharmacopœia has become a legal standard rather than a pharmaceutical guide.

PAPAIN.

The final subject for consideration assigned to us by the General Committee is the assay of papain. This is indeed a difficult task.

There is considerable difference of opinion among the various authorities not

only upon the media to be employed but also the substance to be digested. It appears that papain contains two distinct enzymes—one acting in acid and the other in alkaline media. Arguments have also been advanced in favor of testing papain not only on raw beef but also on blood fibrin or egg albumin. It is our opinion that raw beef is the best substance for this purpose, since it more nearly duplicates in the laboratory the function of papain in the body.

Graber (Journal Industrial and Engineering Chemistry, 1911, Page 921), has shown that papain is most active in acid-solution, neutral media ranking second and alkaline media, third. While this may be true, the testing of papain in acid solution does not eliminate an adulteration with pepsin. It has been found in the Laboratories of The Abbott Alkaloidal Company, that a 5% adulteration with 1/10,000 pepsin would give an otherwise inert papain an activity of 1/30, when tested in acid media. The true question is "how does the papain react in the body?" If it digests fibrin best in acid solution, it will perform this function in the stomach and not in the intestine as is now maintained by some. We should, therefore, devise some method that will eliminate adulteration with pepsin and still show the active power of the papain in acid solution.

A method now in vogue for testing papain in acid media is that of Graber, described in the Journal of Industrial and Engineering Chemistry, 1911, Page 921.

As a method for assaying papain in alkaline media we recommend the following, devised by Mr. Baker. It is conducted as follows: "The test is 1:30 in 6 hours at 50° C. That is, one part of papain should in 6 hours at 50° C. so completely digest and disintegrate 30 parts of raw beef that the undigested residue should not measure more than 2 cc. using 10 grams of beef for each experiment. The test is conducted on round steak free as possible from fat and gristle, which has been finely minced by passing through a meat chopper. For each test 10 gms. of beef, 100 cc. of distilled water made slightly alkaline to litmus with sodium carbonate, .3 gm. of ferment. Invert bottles once every 10 minutes as per U. S. P. test for pepsin. Pour in tall graduated cylinder at the completion of the assay."

While we have called to your attention these two methods, yet we most strongly recommend the following promising method proposed by Mr. Thorburn. This method is both unique and ideal in that it not only tests the papain in both alkaline and acid media, thus giving the total digestive activity, but also eliminates the possibility of adulteration with pepsin; as the pepsin, if present, is destroyed in the preliminary digestion. This method appears to us to be the best yet proposed for the assay of papain. The method is herewith quoted from Mr. Thorburn's report to the committee.

"Dissolve papain .400 gm. and sodium bicarbonate .750 gm. in distilled water enough for 100 cc. Heat to 50° to 55° C.

Scrape lean round steak (better results are obtained by scraping the meat to a pulp instead of grinding) rejecting gristle, fat, etc., to a pulp; weigh 10 gm. meat pulp and place in a 200 cc. digestion-flask; add 100 cc. of the warm solution of papain and sodium bicarbonate. Digest for four hours, shaking the mixture once every 10 minutes; then pour into a measuring cylinder and let stand at rest for one-half hour. If the digestion flask is fitted with a stopper carrying a small graduated tube it is of course much more convenient than pouring into a cylinder; in this case invert the flask and read after one-half hour's standing.

A blank digestion of the meat pulp with sodium bicarbonate should be carried along with the papain digestion.

Not more than 10 cc. of residue should remain after the alkaline digestion with papain.

After reading this residue, warm the mixture to 50° to 55° C. and add concentrated hydrochloric acid 1½ cc.—sufficient to neutralize the alkali and leave .2% to .3% of free acid.

Again digest for four hours shaking every 10 minutes. Let stand at rest one-half hour, then read the residue which should be less than three cc.; this gives the total digestive power of the papain as 1 to 25 four-hour tests which compares favorably with a 1 to 30 six-hour test."

It occurs to us that you would welcome our calling to your attention those drugs and chemicals that each of us have found deficient during the past year. We do this to impress upon you the importance of testing all your supplies, and also the fact that the label or brand is no criterion to purity. Each and every member of this association should at least test all crude supplies. We recommend this not only for your individual welfare but also for the good of the profession. You should also check-test your finished products. You should all attain that position where you can state that your goods absolutely conform to the label, in that they contain the exact quantity of the best obtainable drug as thereon stated. To do this you must invoke the services of the pharmaceutical chemist.

Mr. Baker reports the following as a list of crude drugs and chemicals rejected at the chemical laboratory of the Norwich Pharmacal Company during the past year.

Alum, dried	Continued marked quantities of material insoluble in water.
Ammonium Carbonate	Badly decomposed.
Benzoin	Three different lots rejected, all deficient in alcohol-soluble contents.
Balsam of Tolu	Deficient in alcohol-soluble content.
Balsam of Tolu	Contained rosin.
Black Haw	Not true Black Haw but so-called Variety Black Haw.
Short Buchu	A large percentage of stems present.
Chloroform in bottles of 100 gms.	Shortage in weight of contents, varying from 68.7 gms. to 94 gms.
Cinchonine Sulphate	Melting point low and chloroform-soluble deficient.
Calcium Hypophosphites	Solution in water decidedly opaque.
Coca Leaves	The leaves had deteriorated badly, odor musty, ether-soluble alkaloids but .09%.
Calcium Glycerophosphates	Contained appreciable amount of chlorides.
Calcium Glycerophosphates	Contained an appreciable quantity of citric acid.
Calcium Carbonate	Two lots, aluminum in excess the U. S. P. limits.
Cannabis American	Resin content low 6.5%.
Cayenne Pepper	High in ash content, total ash 9.86%. HCl insoluble ash 5.6%
Chlorophyll	Odor very disagreeable.
Cresol	Gravity low, insoluble in water as it contained tarry matter.
Hops	Rejected, as they were inferior in both color and odor.
Henbane	Assayed .15% mydriatic alkaloids which was suspiciously high
Iron Peptonate	Assayed 20% Fe^2O^3, label claimed 25%.
Iron Peptonate	Rejected on odor.
Iron Sulphate, dried	Gave moisture content of 33%.
Gelatine	Three lots rejected on account of color.
Gentian Powd.	Adulterated with foreign material.
Glycerine	Contained sulphates and color not up to standard.
Glycerine	Color not up to standard.
Guaiac	Four lots, rejected, low in alcohol-soluble content, high in ash content.
Lard	Two lots rejected on odor.
Lithium Citrate	Did not conform to the U. S. P. in purity test.
Lupulin	Five lots rejected—ether soluble content deficient—ash content high.
Licorice Root	The extract obtained had a musty taste.

Lobelia	Rejected as it was mostly stalk and but very few leaves.
Manaca Root	Spurious variety.
Mentha Piperita	Inferior in both color and odor.
Po. Gum Myrrh	Ash content high 15%.
Magnesium Sulphate	Contained the heavy metals in excess of the U. S. P. limits.
Magnesium Sulphate	Purity not up to U. S. P. standard—color also inferior.
Magnesium Oxide heavy	Contained excess of calcium.
Nux Vomica	Physical appearance of the seeds was poor—strychnine content 1.222%.
Oleic Acid	Congealing point 14° C., which is high. Notable quantities of palmitic and stearic acids present.
Oil Thyme	Color very dark.
Russian White Oil (Liquid Petrolatum)	Two lots rejected on account of turbidity.
Phenol	The crystals were off color, being quite red.
Peptone from Beef	Proteid content 71%, which is below our standard.
Pareira Brava	Spurious variety.
Paraffin	Tastes strongly of mineral oils.
Podophyllin	Two lots rejected, deficient in alcohol-soluble content and high in ash content.
Potassium Hypophosphite	Solubility in water not in accordance with the U. S. P.
Peroxide of Hydrogen	Assayed 2.8% H^2O^2—contained free acid and total solids in excess of the U. S. P. limits.
Pink Root	Contained a large amount of earth and dirt.
Gum Senegal	Contained too large an amount of wood.
Squaw Vine	Inferior in physical appearance.
Strophanthus Seeds	Very damp and musty.
Strontium Salicylate	Two lots rejected as color was decidedly pink.
Zinc Oxide	Two lots below U. S. P. standards for purity.
Zinc Valerianate	Two lots below U. S. P. standards for purity.
Vinegar	Gravity and acidity below N. Y. State requirements.

Mr. Thorburn has enclosed the following memorandum to illustrate the need of analytical work as a control in drug compounding. He states that "We have tabulated the last one hundred samples submitted to the scientific department by the manufacturing departments. These samples represent forty-six different preparations and involve about twenty different kinds of determinations such as the estimation of arsenous acid, ammonia, alkaline hydroxides, pepsin, iodine, iodides, lead, ethyl nitrite, phosphoric acid, hydriodic acid, jalap resin, alkaloids from aconite, gelsemium, ipecac, nux vomica, opium, pilocarpus, belladonna, henbane, stramonium, and extractive from various drugs.

"Of these one hundred samples fifty-one were below standard strength, thirty-two complied with the official standard and seventeen were above standard.

"Some extreme cases of deficient strength are worth noting; 2 samples of Fld. Ext. Berberis were 60% and 67% below; 2 Stramonium preparations were 50% below; Fld. Ext. Hyoscyamus varied from 13% to 39% below; Solution Iodine Compound was 47% below; 1 sample of syrup Hydriodic Acid was 50% below; Fld. Ext. Nux Vomica varied from 1% to 19% below and from 2% to 20% above; Fld. Ext. Gelsemium was 48% and 55% below.

"Few of the samples that were above strength were more than 10% above but Extract Belladonna Leaves finished 55% above standard. A number of Pepsin digestion tests gave very satisfactory results but in several cases these samples were more than 25% below standard.

"This series of samples is good evidence that no scheme or plan for the manufacture of pharmaceutical preparations is complete unless it includes the analytical testing of the article after it is compounded and most important of all, its adjustment to standard."

The Abbott Alkaloidal Company report having rejected the following supplies:

Aconite	Low in alkaloidal content.
Alcohol	Excess organic impurities.
Alum	Excess iron.
Apomorphine Hydrochloride	Excess moisture.
Arsenous Acid	Insoluble matter.
Barium Sulphide	Two shipments purity but 19 to 22%.
Calcium Chloride	30.9% water.
Calcium Carbonate	Chlorides.
Chloral Hydrate	Low melting point. Chlorides.
Corn Oil	Less than content.
Diacetyl Morphine Hydrochloride	Excess water.
Hydrastinine Hydrochloride	Excess water.
Ipecac	Low alkaloidal content.
Lanum Hydrous	Moisture.
Methylene Blue	Ash.
Milk Sugar	Insoluble matter.
Morphine Hydrobromide	Excess water.
Nux Vomica	Low alkaloidal contents.
Oil of Cajuput	Copper.
Oil of Peppermint	Dimethyl Sulphide
Papain	Digestive activity.
Potassium Permanganate	Chlorides. Sulphates.
Sodium Bisulphite	Moisture.
Sodium Silicofluoride	Purity.
Strophanthin	Reduced alkaline cupric tartrate in cold.
Talc	Iron.
Tartaric Acid	Sulphates.
Silver Oxide	Silver Chloride.
Zinc Valerate	Purity.
Sodium Salicylate	Alkaline to litmus.

We call your attention to "A Bibliography of the Deterioration of Drugs and Pharmaceutical Products" by E. G. Eberhardt and F. R. Eldred, Indianapolis, Ind., published in the January issue of the Journal of the American Pharmaceutical Association, 1914; and to the "Purity of Chemicals and Drugs" by H. Englehardt, published in the Journal, 1913, page 163.

We also recommend that you submit all compound formulas to your chemists for their approval. Such a procedure will assure you of having formulas already supposedly therapeutically balanced, further improved by their chemical and pharmaceutical adjustment. All three considerations are necessary to secure an elegant and scientific preparation.

In concluding this report the committee desire to herewith acknowledge to the Association their appreciation for the honor that has been conferred upon them through their appointment to this office.

The chairman likewise desires to thank both Mr. Baker and Dr. Thorburn for their prompt and hearty coöperation in the preparation of this report. Both of these gentlemen have herewith suggested to you, methods that are not only unique but also far superior to those in general practice today.

Franklin Peale Summers,
A. D. Thorburn,
W. L. Baker.

WATER PURIFICATION AT COLUMBUS, OHIO.*

CHARLES P. HOOVER,
CHEMIST IN CHARGE.



Perhaps few cities in the world have had so difficult a public water-supply problem to solve as did the City of Columbus, Ohio. For years, it had been the practice to pump sewage polluted water from Alum Creek and the Olentangy and Scioto Rivers, into the distribution-system of the city. Even with these sources of supply, the quantity of water available, was not sufficient, and there was constant danger during the summer and fall months of a water famine.

As has been stated, the water was polluted with sewage, and was at times extremely muddy, and, as the water-sheds of the above-mentioned streams are underlaid with limestone rock, the water passing over and through this limestone was very hard. The hardness was so excessive that the water was not satisfactory for domestic or commercial uses. It would not lather freely with soap, and, when used for boiler-feed purposes, it was very injurious to the boilers, due to the large quantity of scale deposited on their tubes. The water was so impure, that severe epidemics of typhoid fever were of frequent occurrence, and Columbus was recognized as having perhaps as high a typhoid-fever death-rate as any large city in the United States. In 1904, just a year previous to the time that work was started on the improved water supply, the typhoid-fever death-rate of the city was 139 per 100,000, a disgrace to any American municipality.

After heavy rains, the water was so turbid or muddy that it was almost impossible to use it for any purpose. The reader will perhaps realize how muddy the river-water really is, by knowing that, after heavy rains, as much as one hundred and twenty-five tons of mud are removed from a day's supply of water before it is pumped to the consumer.

The Storage Dam:—In order to provide a sufficient quantity of water, a dam was built across the Scioto River about five miles above the city. This dam is a concrete structure 1006 feet long and thirty feet high. The reservoir formed by the construction of this dam, across the river, is 5.8 miles long, has an average width of 500 feet, and its capacity is 1,720,000,000 gallons.

The dam is located about 4.5 miles from the Purifying and Softening Works, and it was planned to build a gravity-conduit from it to the Purification Works but no money was appropriated for this work, therefore, the river is used as a conduit; the water flowing down the river from the dam to the Pumping Station. The water is then pumped from the river to the Purification Works, and is softened and filtered, then pumped into the distribution-system.

The Water Purification Works:—These are designed for softening as well as filtering the water, and on account of the extremely variable characteristics of the untreated water, great elasticity was sought in their operation.

*Delivered before the Columbus Branch, December 9, 1914.

The plant comprises primarily:

1. A lime saturator, composed of six tanks, each twenty-five feet square, in which the chemical reactions begin.

2. Two Baffled Mixing-Tanks, each two hundred and four feet long, twenty-five feet wide and twenty feet deep.

3. A settling basin divided into six compartments with a total capacity of fifteen million gallons, in which the greater part of the turbidity and precipitated materials are removed by sedimentation.

4. Ten mechanical filter units, each with a net filtering area of 1089 square feet.

The above have a normal rated capacity of thirty million gallons per twenty-four hours and in addition there is:

5. A covered, filtered-water reservoir holding ten million gallons.

Included in the plant there are also a storage-house for chemicals and a Head House, in which is placed the equipment for dissolving and feeding the lime, soda-ash and coagulant into the water. The chemical and bacteriological laboratories are also housed in this building.

Purification with Alum:—When sulphate of alumina is added to a muddy, alkaline water, the aluminum combines with the alkalinity of the water, and a flocculent, gummy, gelatinous precipitate of aluminum hydroxide is formed. This precipitate entrains the mud and bacteria, and all suspended particles present in the water, and being heavy soon settles. This settling-process, or sedimentation, takes place in large, concrete settling-basins from which the material which settles from the water is washed back into the river, below the in-take.

Only minute quantities of alum are required to properly coagulate the sediment. From one to two grains of alum to a gallon of water, is usually sufficient, unless the water is extremely muddy; then as much as four grains is sometimes required.

There are seven thousand grains in a pound, so that one grain per gallon, is equivalent to one pound in seven thousand gallons of water. Even this small quantity does not remain in the purified water, because, as has already been explained, the alum is precipitated and settles out of the water with the mud and other impurities.

Softening Water:—Lime and soda ash are used to soften the water, and during the year 1912, the total hardness of the river water averaged two hundred and twenty-two parts per million, whereas, the average total hardness of the filtered water was only seventy-nine parts per million. At first, the consumers felt that the use of chemicals for softening and coagulating the water, would not be desirable, and had some hesitancy in using the chemically-treated water. This prejudice has been entirely overcome and the people are now beginning to realize that there is less chemical in the filtered water than there is in the untreated river water. The reason that there is less chemical in the filtered water than there is in the river water, being, that the chemicals which are added to the water, in order to soften and coagulate the impurities, combine with the soluble carbonates and sulphates present in the water and form insoluble compounds, which are removed from the water by sedimentation and filtration.

The following paragraph will explain more fully the nature of lime and the reactions which take place when it is added to hard water.

Lime is made by burning limestone in a kiln. Pure limestone has the chemical

formula $CaCO_3$ (Calcium Carbonate). When this is burned, the following reaction takes place:

$$\underset{\text{Calcium Carbonate}}{CaCO_3} + \text{burning} = \underset{\text{Lime Oxide.}}{CaO} + \underset{\text{Carbon Dioxide.}}{CO_2}$$

The difference, therefore, between limestone and lime is that the calcium of the limestone is combined with CO_2 (carbon dioxide) as a carbonate, and, in burning, the carbonate is broken down, carbon dioxide passing off as gas, leaving the calcium combined with oxygen as an oxide (Ca O).

Lime has a great affinity for carbon dioxide, and when it is exposed or comes in contact with carbon dioxide, the carbon dioxide is immediately absorbed and the lime is converted back to its original state, that is, limestone or calcium carbonate.

All natural, hard waters contain free and half-bound carbon dioxide, and it is the presence of this carbon dioxide, in water, that enables the water to dissolve and to hold in solution, large quantities of limestone.

It is a well known fact, that if hard water, that is, water containing lime carbonate in solution, is boiled, the CO_2 (carbon dioxide) which it contains, is expelled, and a deposit of lime forms in the bottom of the vessel in which the water is boiled, demonstrating that the limestone is not soluble in water, only in the presence of CO_2.

When lime is added to hard water, it absorbs the carbon dioxide present in the water, is, itself, converted back to limestone, and as limestone is not soluble in water in the absence of CO_2, it settles out of solution along with the mud and other impurities. The limestone originally present in the water, also is precipitated and settles out of solution as soon as the CO_2 is absorbed by lime, therefore, the lime added to the water, as well as the limestone originally present in the water, is removed, and the water contains less chemical or mineral matter than it did in its natural condition, and is therefore softer.

Lime will not remove sulphate-hardness, therefore, this condition is removed by precipitating it with soda-ash (sodium carbonate).

It has been learned at the Columbus plant, that the addition of lime not only softens the water, but that the typhoid and other intestinal bacteria, will not live in lime-softened water, because the lime absorbs the carbonic acid from the water, and these disease-producing bacteria will not live in water free from carbon dioxide.

If lime-softened water be inoculated with typhoid organisms, they will die out in a period of twenty to twenty-four hours, and if the water be softened to the lowest possible figure with lime, and an additional quantity of lime added, sufficient to introduce a small quantity of excess lime, the sterilization is accomplished in from four to five hours.

Brief Description of Process:—The water is measured, through Venturi Meters, as it enters the water-softening and purification works. Lime, and soda-ash are added to it in the proper proportions to soften it, and sufficient alum to properly sedimentize it, which are determined by two hour chemical determinations. After the chemicals are introduced into the water, the water so treated, is then passed through long mixing-tanks, where the chemicals and water are thoroughly mixed, and the chemical reactions take place. From the mixing-tanks the water passes

into settling-basins, and the mud, bacteria and precipitated limestone are deposited. Practically all of these impurities are removed by sedimentation, but, in order to remove all suspended particles, the clear water from the settling-basins is passed through sand filters. The water passes through the sand, into a large covered concrete reservoir; and from this reservoir is pumped to the distribution system.

Purity of Filtered Water:—Columbus has now one of the most modern, fully-equipped water purifying systems of the world.

The water delivered to the consumers is satisfactorily soft, is always sparkling-clear, has a wholesome taste, and is absolutely pure.

During the year 1912, the average number of bacteria present in the river water was nineteen thousand two hundred and ten per cubic centimeter, and the average number in the purified water was only fourteen per cubic centimeter, a reduction of 99.93%. Another evidence of the purity of the water, is the decrease in the typhoid-fever death-rate, which has fallen from one hundred and thirty-nine in 100,000, to about eighteen in 100,000.

THE RELATION OF PHARMACY TO MEDICINE.

ALBERT H. DEWEY, PH. G., B. S., M. S.



Historically, pharmacy and medicine had a common origin. If we would advance the contention that pharmacy is the mother of medicine, we must at the same time admit that the parent is subservient to its offspring. However that may be, the fact remains that, somewhere in the past there arose the necessity for a separation of the two professions. This necessity was undoubtedly an economic one, which had it foundation deep-rooted in the very nature of the two professions.

The ancient pharmacist, who spent his time in collecting and curing drugs, of both animal and vegetable origin, and making, from these drugs, the various preparations required in the treatment of disease, could not become very highly proficient in the diagnosis and treatment of human ills, crude and imperfect as these arts may have been at that time. Conversely, the physician, who devoted his time to attendance upon and treatment of the sick, had not the time to become skilful in the recognition of the growing plants used in medicine, nor in the art of their preservation and preparation for use.

Hence, the separation of the two professions, was one of the mighty factors that made for the increased efficiency of both. And, right here, it might be pointed out that the more skilful and efficient a physician became, through a conscientious devotion to his work, the more he stood in need of the services of a skilful and efficient pharmacist, while the pharmacist's profession depended wholly upon that of medicine. This mutual inter-dependence of the two professions, without doubt, increased the efficiency of both and its re-establishment in

modern times for the sake of increased efficiency is one of the important questions confronting these two sister professions to-day.

On down through the ages, this division of labor in the interests of economy and efficiency has continued, until to-day we live in the greatest age of specialization the world has ever known.

One factor which has influenced this evolutionary development in pharmacy, more than in medicine, is modern business organization and the influence of large combinations of capital. From the very natures of the two professions, this fact is more applicable to pharmacy than to medicine. For example, a large manufacturing-establishment can make a thousand gallons of a given preparation better and more economically than a thousand individual pharmacists can make a gallon apiece; but neither the application of modern business principles, nor large combinations of capital have yet devised a machine which will perform a thousand appendicitis-operations collectively, more economically or more efficiently than a thousand such operations can be performed individually.

Because of this influence of modern business organization, the processes of pharmaceutical-manufacturing have practically passed out of the hands of the individual pharmacist. And long ago, because of the area from which drugs are collected, market-conditions, and a differential-price for labor, the collection and preservation of drugs had passed out of his hands.

What then remains, at present, as the pharmacist's work? "Compounding and dispensing," if we apply ordinary subtraction to our time-honored definition and scan not too closely the forces that are even now grasping for these.

It is admitted on every hand, that the gross income from the compounding and dispensing of physicians' prescriptions in the average drug store to-day does not exceed ten *per cent.* of the total gross income. The other ninety *per cent.* comes from the commercial end of the drug business, which is, largely, retail merchandising-operations, into which the pharmacist has entered in order to earn a livelihood.

In this connection, it might be pointed out, that the same natural law, which made it impossible for the ancient pharmacist to become proficient in the art of healing the sick, because he devoted his time to the collection and preservation of drugs and their preparation for use, to-day makes it impossible for the pharmacist to become skilled in the real work of pharmacy, because he is assiduously devoting his time to side-line merchandising, bargain-store methods, advertising, window dressing, etc., etc.

This brings up the very important question,— "What is the real work of pharmacy to-day?"

Even as the ancient pharmacist, by intelligent assistance, made the ancient physician more efficient in his work, so it should be the real function of the modern pharmacist, by intelligent assistance, to make the modern physician more efficient in the work that he is endeavoring to do.

With the remarkable amount of research that is constantly being carried on in the field of medicine, there is, inevitably, a broadening of, and in many cases, fundamental changes, in our knowledge of the nature and cause of disease. This progress and development in medical knowledge, mean corresponding changes and progress in the treatment of the disease.

Not many years since, if the physician desired an infusion or decoction, an ointment or emulsion or pill or any thing else, well prepared, for the treatment of a patient, he turned to his reliable helper, the pharmacist, and received an efficient and potent preparation. To-day if he desires a blood-count, a urinalysis, a gastric- or fecal-analysis, an autogenous vaccine, a Widal or Wasserman test, or any one of a long list of things, which the physician in most cases must delegate to some one else, does he turn to the pharmacist? And if not, why not? Simply because the pharmacist of to-day is neither equipped, nor prepared, nor competent, to do this kind of work. He is too busy selling tin watches and sugar-coated prunes: his mind is on the weighty problems of how to compete with the chain-store or the copy for his next week's cut-rate advertisement. While the physician has been learning new facts about disease, leading to new methods of treatment, the pharmacist has been adding side-lines. There is no reflection in pharmacy of the changes and progress occurring in medicine.

As before indicated in this paper, a man becomes most efficient in that to which he devotes his time, his energy, and his attention. The commercial pharmacist who devotes his time and attention almost wholly to the problems of the business world, can be of but little professional assistance to the physician. The physician who devotes himself to his practice, cannot continue to be an efficient and reliable laboratory-worker, and yet this laboratory-work must be done and done well, if the physician is to do full justice to his patient and to himself.

There are many things in the diagnosis and treatment of disease to-day that, for a variety of reasons, the average modern physician cannot do for himself, but must delegate to some one else to do for him. Who is to do this,—the physicians' "delegated work"? We may admit that the physician who has at his command the services of an educated, experienced, competent, reliable laboratory-worker, in a thoroughly equipped laboratory, is a far better and more efficient physician than he would be without such assistance. If we admit, also, that such a laboratory-worker will increase the efficiency, not only of a given physician, but of every physician who will avail himself of the opportunities of such assistance, then we may catch a glimpse of the tremendous uplift that such a class of men could give to the medical profession.

Nobler, holier, more useful work was never entrusted to human hands than the medical profession is doing to-day in its efforts to stamp out human disease. To have had part, however humble, in such a work, is a rare privilege and worthy of any man's ambition and his life's best efforts. And yet, we find this field almost wholly unoccupied, with not a single university, or college of medicine, or college of pharmacy, fitting its graduates to do this most useful, necessary and important work.

This feature of the situation could undoubtedly be overcome, but another feature, less easily provided for, is the question of legal registration for the practice of such a profession.

I believe it is an indisputable fact, that the men now registered as pharmacists or those who may hereafter become registered under our present pharmacy laws, are not and will not be qualified for this kind of work. Graduates of our pharmacy colleges are not excepted in this statement.

The purpose of registration as a legal pre-requisite for the practice of any

profession, is, we may assume, two-fold in its nature. First, it would protect the public against incompetent and inefficient practitioners, and second, it would protect the qualified practitioner against the unjust and unfair competition of the unqualified practitioner.

If it is ever hoped to raise up a reliable and competent class of professional men who are capable of being a real help to the medical profession, the individual must have the protection of registration upon a plane high enough to actually protect him against the competition of unqualified men.

Elsewhere I have referred to the pharmacist of to-day as a commercial pharmacist and I should like to make clear, my idea of the distinction between the commercial pharmacist and the professional pharmacist. The commercial pharmacist practices a kind of pharmacy which is wholly independent of the medical profession, while the professional pharmacist practices a kind of pharmacy which is wholly dependent upon the medical profession. To be sure, these two kinds of pharmacy are hopelessly mixed in the drug store of to-day and, united with them, is a miscellaneous lot of retail merchandising, that bears no relation *whatever to any kind of pharmacy*. But the fundamental distinction between commercial and professional pharmacy, is their relationship to the profession of medicine. Whether professional pharmacy,—and that means the physicians' delegated work, and, practically, that means the prescription-business,—can ever be separated from the "hodgepodge" we now call the drug business, is a question, but it, undoubtedly, belongs with the rest of the physicians' delegated work, in the hands of a well-educated, well-equipped, competent, reliable man, who for lack of a better term, we may call a professional pharmacist.

ATROPA BELLADONNA.*

BERTHA OTT, PHAR. B.

History:—Atropa Belladonna is the subject of many legends and how it came by its name is interesting to know. Atropa (Greek, Atropos) was the eldest sister of the Three Fates, who were worshipped by the ancient Greeks and were supposed to preside over accidents and events; to determine destiny; and the period of human life. Their names were Clotho, spinner of the thread of life; Lachesis, the second, who twisted it and under whose fingers it was made now strong, now weak:—

> "Twist ye, twine ye! even so
> Mingle shades of joy and woe,
> Hope and fear, and peace, and strife,
> In the thread of human life."

Atropos, the third sister—"the inflexible," the fate that cannot be avoided—armed with a pair of shears remorselessly cut short the thread of life. Belladonna from the Latin (Bella) Handsome, (Donna) Lady—so named because Italian

* Read before the Cincinnati Branch A. Ph. A.

ladies used a cosmetic made from the berries, and the Spanish ladies used preparations made from this plant to dilate the pupils of their brilliant eyes.

In many parts of Southern and Central Europe and in some parts of Asia, flourishing in shady places, growing by old walls or thriving amongst rubbish heaps—may be found this herbaceous, perennial plant, of the Solanaceæ family, three to five feet high, known as the "deadly nightshade." It has merited its ominous name from the dire effects it produces on any human being who ventures to eat any portion of it.

The wide-spread distribution of the plant made its properties known to the inhabitants of most countries, and although no definite mention of it can be traced in ancient literature it is reasonable to suppose that it was well known to ancient peoples. Theophrastus, the pupil and successor to Aristotle, describes under the name Mandragora, a plant closely resembling belladonna, and Dioscorides is said by some to mean the same herb in the plant he names Strychnos-manicos.

There can be no doubt that its poisonous properties were utilized in the good old days—though seldom referred to as a remedy. For the past two centuries it has been pretty regularly mentioned by all those who wrote comprehensively on medicine, and more or less used, but never so common until its usefulness in the examination and treatment of the eye, opened for it a new and important field. It has been a panacea among Homeopaths and a specific with the Eclectics since the foundation of their schools. In "regular medicine" belladonna has a more recent introduction, due to the well-known pharmacist, Mr. Peter Squire, of London, who about 1860 commended it as the basis of a useful liniment, for the relief of neuralgic pains. At the present time it is considered one of the most important items of our Materia Medica.

Description:—The plant flowers in June and July. In September its livid, purple, bellshaped, flower gives place to shining, purple black fruits or berries, luscious in appearance and sweet to the taste. These berries have been eaten by children while playing in fields and lanes and in most instances with most unfortunate results. All parts of the plant are active. The parts directed for use by the U. S. and Br. Pharmacopœia are the leaves and the root. Leaves should be collected when the plant is in flower, roots from plants three years old or more, collected in autumn. Leaves which have been kept long should not be used, as they undergo changes through absorption of atmospheric moisture, emitting ammonia and probably losing a portion of their nitrogenous matter.

Our U. S. P. directs us to use leaves of the following description: "Usually of a dull-brownish color, the leaves much wrinkled and matted together, frequently with the flowering tops intermixed; leaves from 6 to 20 cm. long; 4 to 12 cm. broad; broadly ovate; apex acute; margin entire; narrowed into the petiole; upper surface brownish-green, lower surface grayish-green; epidermis more or less papillose; particularly on the under side, odor distinctly narcotic, especially on moistening; taste somewhat bitter and acrid. The powder is characterized by few hairs and numerous, small arrow-shaped crystals of calcium oxalate. Leaves when assayed by the U. S. P. process should yield not less than 0.35% of mydriatic alkaloids. The dried roots of not less than 0.5% of mydriatic alkaloids.

Roots described as follows: Of cylindrical or somewhat tapering, longitudinally, wrinkled pieces 1 to 2.5 cm. thick, the bark somewhat incurved at the edges of roots, which have been split before drying; externally brownish-gray, dusty or mealy; outer layers of the periderm rather soft; frequently abraded and thus showing lighter patches; fractures nearly smooth, mealy and emitting a characteristic puff of dust; internally whitish; the older roots showing medullary rays near the bark; nearly inodorous; taste sweetish; afterwards bitterish and strongly acrid. Roots that are shrunken, spongy, dark-brown and free from starch should be rejected as also old woody roots and stem-remnants. Microscopical examinations of belladonna root shows bark rather thick, free from bast fibers, composed almost entirely of parenchymatous cells, more or less filled with starch grains and calcium oxalate raphides.

In various parts of Europe both the leaves and the root of belladonna are adulterated with the similar products of a Phytolacca, which has been variously supposed to be the Phytolacca Decandra of North America, which has become naturalized in Southern Europe. The leaves and general appearances resemble those of belladonna, but are to be recognized by their upper surfaces being without hairs and brighter than in the belladonna plant. The dried phytolacca root resembles superficially that of belladonna, but may readily be distinguished by the epidermis not being easily abraded with the finger nail. The histology of the root is characteristic, the raphides are acicular instead of being as in belladonna, sandy crystals, and the root itself is generally characterized by the alternating distinctly separate rings of wood and bast tissue.

Attention has been called to the species of Scopola, a genus connecting atropa and hyoscyamus as resembling belladonna. The rhizomes of the Scopola Carniolica are very similar to the roots of belladonna, the bark, however, of the former is less thick. Scopola Japonica (Japanese Belladonna) was found to be similar to Scopola Carniolica. This drug is official under Scopola.

Active Principles:—The active principles upon which the medicinal repute of belladonna depends are atropine and hyoscyamine-alkaloids possessing the same chemical formula ($C_{17}.H2_3.NO_3$), but differing somewhat in therapeutic properties. The close connection of the alkaloids suggest that it would be difficult to obtain one free from the presence of the other, and as a matter of fact, the official atropine allows a small amount of hyoscyamine. The melting points of these two alkaloids differ—the most reliable test, however, is dependent upon the fact that while a solution of hyoscyamine is capable of rotating the plane of polarisation of a ray of light to a considerable degree, pure atropine is optically inactive. Investigations undertaken at the request of the Schering manufactory to determine why the proportion of hyoscyamine and atropine in a root seems to vary with the method of working, reached the surprising conclusion that the optically active hyoscyamine can be changed into the optically inactive atropine under a variety of circumstances such as fusion, action of weak soda solution (even at ordinary temperature), and of ammonia. Other existing alkaloids of belladonna are belladonnine hyoscine and atropamine, besides the usual vegetable constituents, such as albumen, gums, etc., and a coloring principle named atrosin. Belladonna has been studied by Vanquelin and many chemists after him, but it was not until 1833

that atropine in a state of purity was isolated from it. This was accomplished simultaneously by Geiger and Hess, two German chemists, and Mein, a German pharmacist.

Preparations:—Pharmaceutical preparations of the leaves are Extract Belladonna and Tincture Belladonna. From the extract we prepare the U. S. P. plaster and ointment. The extract is also a constituent of Co. Laxative Pills, and of Podophyllum, Belladonna and Capsicum Pills. Of the root we have Fl. Ext. Belladonna and Belladonna Liniment. Other official products are Atropine, Atropine Sulphate, Oleate of Atropine and Homatropine Hydrobromide.

Uses:—Belladonna is one of the most useful agents in the materia medica, ranking high in its efficacy and its wide range of usefulness. The most important uses of atropine or belladonna are:— (1) In the form of a belladonna plaster or liniment atropine or belladonna, it is used to relieve pain on the area where it is applied. (2) As a cardiac and respiratory stimulant especially where immediate effects are desired. (3) As an antidote for morphine poisoning, and it is often given with morphine to avoid poisonous effects. (4) Atropine is used to dilate the pupil, so that the retina or background of the eye may be more easily examined and to prevent adhesions between the iris and lens, when the iris is inflamed. (5) Atropine is often given to check secretions, for example, profuse perspiration, etc.

Symptoms of Overdoses:—Symptoms of overdoses are dryness of the mouth and throat; redness and dryness of the skin, pulse and breathing rapid; pupils widely dilated; great restlessness, followed by delirium. The delirium is peculiarly wakeful, active and talkative, the excessive excitement is followed by a deep sleep, which gradually becomes deeper (stupor).

Antidotes:—As antidotes give evacuants (emetics and cathartics), tannic acid; keep body warm; give artificial respiration if the breathing is embarrassed. Give heart and respiratory stimulants, such as whisky, caffein, strychnin, etc.

A recent writer on Materia Medica advises us *not* to give morphin, for while atropin is the antidote for morphin, the dangerous effects of atropin are due to the exhaustion of the breathing. If morphin is given in such cases, the breathing is only made slower. Morphin, therefore, is not an antidote for atropin, though atropin is an antidote for morphin.

Cultivation:—Having reviewed this most interesting plant, let us, but for a few moments consider its cultivation. Until recently the manufacture of belladonna preparations was carried on exclusively with wild plants, gathered in a somewhat haphazard fashion by herb collectors. When the scientific cultivation of medicinal herbs on a large scale was introduced, many critics declared that wild belladonna was superior in alkaloidal strength to that of the cultivated variety, but manufacturers at home and abroad, upon investigating, have shown that this fear is groundless, results showing that a plant of much greater alkaloidal strength than what our U. S. P. demands may be obtained.

Since belladonna is not an indigenous plant, present war conditions have opened our eyes, as to the future supply, and great necessity of home production or cultivation of this plant, and we are glad to note what is being done to conserve this wonderful drug. Pioneer among those who have introduced the scientific cultivation of belladonna in the U. S. are Johnson & Johnson of New Brunswick,

N. J. Their experiments have led the way to a higher grade of belladonna, to any that has heretofore been known. Their farms comprise fourteen acres, at the above-mentioned city, a fairly large one at Conshohacken, Pa., near Philadelphia, and forty acres at Salinas, Calif. The work of Johnson & Johnson in the culture of the belladonna plant, has aroused worldwide interest, and this interest is just now being revived. During the years which have passed extended experiments have been made as to the influence of soil, climate, fertility upon the plant and the yield of the alkaloid. The researches of Johnson & Johnson upon the cultivation of belladonna in the United States have been most varied and extensive, a considerable amount of which has been published for the benefit for all interested therein. Incidentally it might be mentioned that this work is enormously extensive and as yet they have not been able to supply their own demands. But they are glad to make their contribution to American materia medica, and they believe the experience they have gained by the contribution to the knowledge of such an important plant as belladonna will compensate them for their outlay. We hope that in the near future their efforts may be rewarded with an abundant supply of this drug so as to also make a financial success. By coöperation with other nations the U. S. Department of State, through its consulate service and the Department of Agriculture, through its Bureau of Plant Industry, bring out and put at our disposal much valuable information about the growing of foreign plants.

Among others the U. S. Department of Agriculture at the Arlington Experimental Farm, Virginia, is carrying on interesting work in regard to the breeding of plants, in order to obtain a type of belladonna plant, fairly constant in the yield of its alkaloids. Observation work is also carried on by Parke, Davis & Co. of Detroit, Mich., Eli Lilly & Co. of Indianapolis, Ind., and a firm of Glenolden, Pa.

Among the schools of pharmacy which have undertaken the cultivation of medicinal plants so as to facilitate and make more comprehensive the study of pharmacy and pharmacognosy, we would mention the Minneapolis College of Pharmacy and the Philadelphia College of Pharmacy.

We consider the appeal to pharmacists by Mr. Kilmer, in the October issue of the "Practical Druggist," should receive deep consideration where he says:— "It is the duty of the pharmacist to supply the materia medica needed for the alleviation of disease, and especially those which he can grow or otherwise produce for himself. If we could thus multiply and extend the cultivation of medical plants among the thousands of druggists in the United States, we would soon find ourselves independent of other sources of supply."

"Here, then, is our opportunity and our duty to protect and conserve the supply of drugs and medicines against existing influences and such as may come upon us in the future." In fulfilling our duty we will be able to supply ourselves with a quality of crude drugs which will yield for us the purest and best preparations.

Bethesda Hospital, Cincinnati.

THE WAR AND DRUG IMPORTATIONS.*

HARRY B. FRENCH, PRESIDENT SMITH, KLINE & FRENCH CO.

When war broke out between the European nations, commerce for a time was paralyzed. There were hundreds of German ships on the high seas as well as a number of Austrian ships. These vessels were all liable to capture as soon as they left neutral waters. Up to that time they had been doing a very large portion of the carrying trade, especially from China and Japan and from Germany to North and South America. Moreover the ships of the *Triple Entente* were not safe so long as there were a number of German cruisers scattered over the different parts of the world. That these cruisers have given a good account of themselves is shown by the fact that there have been nearly two hundred vessels of the *Triple Entente*,—that is vessels belonging to France, Russia and England,—that have been captured.

The immediate result of the breaking out of the war was the seizure of many of these vessels in transit, the holding up in the ports of one of the belligerents of merchant vessels belonging to an enemy, and the detention in neutral ports of many other vessels. This for a considerable time prevented the forwarding and the delivery of the merchandise, and produced for the time being a great scarcity of goods.

After a few weeks it was found that merchandise could be imported, though roundabout routes had to be taken, but there were great delays in shipments, and the goods were still liable to seizure by an enemy. German chemicals in considerable quantities were shipped through Switzerland and from the Port of Genoa, and through Christiana, Sweden, Copenhagen, Denmark, but mostly through Rotterdam. Crude drugs came more largely through the southern ports of Europe.

At the present time most of the heavy chemicals can be bought at prices almost as low as prevailed before the war, but the goods must be paid for by sight draft. Crude drugs in many cases can be bought at lower prices than before the war, but there is great difficulty in obtaining shipments, owing to the difficulty in making payments. In many cases the money has to be sent abroad and trusted to the honesty of the shippers. For instance, in having goods shipped from Trieste, we found it necessary to have our bankers here cable the money to a correspondent in Milan, Italy. The correspondent sent the money to the merchant in Trieste. This method is not entirely acceptable because it places the buyer entirely within the hands of the seller, besides being expensive in other ways.

The position has been complicated in recent weeks by the entrance of Turkey into the war. This directly affects such articles as Opium, Tragacanth, Aleppo Nutgalls and Colocynth from Syria, and it also affects Gum Arabic from Egypt. The effect on Gum Opium has been lessened by the large stocks held in this country in bond, and by the fact that Persian gum can be substituted for manufacturing purposes. If, however, there should be a Mohammedan uprising, all these

* Read before the Philadelphia Branch at its December meeting.

articles would be even more seriously affected, as well as many others. As it is, Persia is now in a very disturbed state.

If the war continues it is thought there will be a material advance in the price of Gum Opium and there should be also a corresponding advance in the price of its derivatives, especially Morphine and Codeine. Shortly after the Turkish war broke out and when it was fully expected that Morphine and Codeine would advance, the prices were reduced. This was a very unfortunate step, for the reason that it lessened the value of the stock on hand of all dealers in Morphine and Codeine, all tablets and pills and other preparations made from these salts. The reduction was not based on conditions or on supply and demand, but simply and solely from an antagonistic feeling that had grown up between certain powerful manufacturers. From the consideration of this unjustifiable action, dealers must reach the conclusion that they cannot base their operations on the ordinary laws of trade, such as supply and demand, as such laws may be affected by the war conditions, but they must also take into consideration the jealousies of different manufacturers, who evidently will not hesitate to cause much loss to their customers and will not hesitate to make it impossible for such customers to use their business experience and sagacity. We have no hesitation in condemning this reduction in the price of Morphine and Codeine as unjustifiable, either on the grounds of policy, of conditions, or of morals.

At the present time, it is somewhat easier to obtain goods and they are coming here in larger quantities, but there are such uncertainties and delays in shipments that at one moment the market is flooded with arrivals and later is bare of stock. In many quarters it is thought that the chemicals and the crude drugs that are being shipped to this country are from accumulated stocks, and that later when these stocks become greatly depleted, much higher prices will prevail. This is undoubtedly true of some goods, but it is hard to tell whether it will apply generally. For instance, a remark was made some time ago that Germany had a population of sixty-five millions of people and that about five millions of these had been taken from their ordinary occupations. This, however, left sixty millions of people to carry on the work of the sixty-five millions. Of the five millions taken from their occupations, many of them were trained for special work and their places cannot be filled. You must remember, however, in Europe the women are accustomed to work and it is problematical how much of this work left undone by the five millions taken away, can be done by the sixty million people. The writer's opinion is that if the channels of trade are free from hindrances such as now prevail, that merchandise, whether in the form of manufactured products or of crude drugs will be obtainable to a greater or less extent. Every month, however, that the war is prolonged must increase the economic loss, resulting from the increased destruction of men, of countries ravished by the contending armies, and also from the cessation of productive work. It is probable that the next two or three years this country will see great prosperity, as the demands of the combatants upon the resources of this country will be greater than formerly, and they must be paid for, however great may be their deprivation in other respects. It is certain, however, that no such tremendous

loss of life and material can take place, as has now taken place in Europe, without disastrous results being felt by every country in the world for many years to come, though it may be two or three years before the reaction begins to be felt in this country.

At the breaking out of the hostilities, the question of method of conducting our business had to receive immediate consideration. There were two methods to be pursued. One method was to hold down prices but to refuse to fill orders, or to fill only a very small percentage of orders. The other was to fill all orders that came into the house and advance prices so far as might be necessary because of the increased cost of replenishing stock. This last course was the course followed by the house I represent. Our thought was that we were in business for filling orders of our customers at the market prices. For instance, the manufacturers did not advance their price beyond 70 cents per pound for Citric Acid, but could only fill a very small portion of the demand. The larger portion of Citric Acid sold by houses like ourselves was bought from second hands and imported from Europe. At one time the price advanced in Philadelphia as high as $1.35 per pound and in New York to $1.85 per pound. Large buyers paid as high as $1.20 or more in order to fill such orders. Some unjustifiable criticism was raised by this course of procedure by those houses that quoted prices but refused to deliver goods. There were certain manufacturing houses that sent their price lists all over the country quoting low prices for their chemicals and absolutely refusing to sell a dollar's worth of many of the articles that they quoted. This produced a great deal of confusion and unjustifiable recrimination. Some wholesale druggists quoted low prices throughout the country on articles like Citric Acid, but when they received an order for five or ten pounds would send one pound only. Their prices, therefore, did not represent the market, as the market price is the price that will obtain the goods.

The rulings affecting shipments abroad are very interesting. For instance, our Government has taken the position, as I understand it, that any nation can give its own definition of contraband and act upon that definition. That if the Government of the United States should ship contraband goods to a belligerent, it would commit a hostile act against the enemies of that particular power. That if an individual should make such a shipment, he would also commit a hostile act against the enemies of the power to whom he made the shipment. The Government, however, is not compelled to restrain such shipments, but if such shipments are seized, the shipper cannot claim the protection of the Government. I think possibly that many citizens have wondered why it is that this Government permitted England to stop ships, flying an American flag or a neutral flag, on the high seas, condemn certain portions of their cargo and take them into their own ports. It will be interesting to remember that a British ship, sailing from England to the Island of Nassau, one of the British possessions, was seized when about 150 miles from Nassau, during the War of the Rebellion, by an American man-of-war and was condemned by a prize court in New York City. Later the vessel was released, but the cargo was condemned as being ultimately destined to the Confederacy. Our Government acted on the principle that the ultimate destination of the cargo was the point at issue, and that this was not affected by the fact

that the cargo might be shipped first to a neutral port and transferred by several different vessels. Apparently England and France have the right to declare anything contraband that they may wish, but they are probably restrained because of the danger of inciting hostile feeling in this country.

The following prices have been taken from "The Oil, Paint and Drug Reporter" of New York. We give the prices of the articles mentioned before the war, on September 1st and on December 1st. This table shows some of the variations of prices:—

	Before War.	September 1st.	December 1st.
Atropine Sulphate	$ 8.00 oz.	$35.00 oz.	$18.00 oz.
Salicylic Acid	.25 lb.	1.15 lb.	.70 lb.
Adeps Lanæ, Hydrous	.17 lb.	.80 lb.	.22 lb.
Tartaric Acid	.30 lb.	.75 lb.	.42 lb.
Citric Acid	.55 lb.	1.25 lb.	.60 lb.
Salts of Tartar	.08½ lb.	.25 lb.	
Potash Permanganate	.10 lb.	.75 lb.	.14 lb.
Quinine	.26 oz.	.31 oz.	.26 oz.
Cod Liver Oil	19.00 bbl.	29.00 bbl.	20.00 bbl.
Benzoic Acid	.26 lb	2.00 lb.	.40 lb.
Quicksilver	.54 lb.	1.10 lb	.75 lb.
Juniper Berries	.03½ lb.	.22 lb.	.04½ lb.
Camphor, Japanese	.42 lb.	.95 lb.	.44 lb.
Hyoscine Hydrobromide	21.00 oz.	120.00 oz.	43.00 oz.
Canary Seed	.06 lb.	.14 lb.	.07 lb.
Celery Seed	.20 lb.	.40 lb.	.16 lb.
Japan Wax	.10½ lb.	.22 lb.	.10½ lb.
Belladonna Leaves	.60 lb.	2.25 lb.	1.10 lb.
Dandelion Root	.15 lb.	.70 lb.	.25 lb.
Cumarin	3.10 lb.	12.00 lb.	3.25 lb.
Hydrochinone	.51 lb.	8.00 lb.	1.50 lb.
Potash Bromide, Gran	.37 lb.	.74 lb.	.74 lb.
Carbolic Acid	.08½ lb.	.70 lb.	.55 lb.
Caustic Potash	.05 lb.	.32 lb.	.08 lb.
Potash Prussiate, yellow	.13 lb.	.30 lb.	
Homatropine Hydrobromide	42.00 oz.	135.00 oz.	85.00 oz.
Phenolphthalein	1.05 lb.	2.00 lb.	1.25 lb.
Sodium Cacodylate	3.50 lb.	18.00 lb.	6.00 lb.
Thymol	1.80 lb.	12.00 lb.	5.50 lb.

REVIEW OF CURRENT PHARMACEUTICAL LITERATURE.*

FREEMAN P. STROUP, PH. M.

The abstracts herewith given are from the November numbers of several publications and are few in number, for, much to the writer's surprise, he found very few original articles of much real interest to the average pharmacist, that might be considered as being at all scientific. There were many articles on commercial topics and of academic interest, and many of the journals had reprints

* Read at the December meeting of the Philadelphia Branch.

of excellent papers, and a considerable number contained a large number of abstracts from excellent articles, some from foreign and others from domestic journals.

MERCK'S REPORT.

Objectional Labeling for Medicinal Preparations:—The U. S. Department of Agriculture, through the Bureau of Chemistry, has issued a number of suggestions to makers and proprietors of medicinal preparations to be followed by them in avoiding conflict with the provisions of the amended Food and Drugs Act, and has given examples of the kind of advertising that would bring them into danger of prosecution as violators of the law. Some of the suggestions follow:—

"A preparation cannot be properly designated as a specific, cure or remedy, or recommended as infallible, sure, certain reliable or invaluable, or bear other promises of benefit unless the product can, as a matter of fact, be depended upon to produce the results claimed for it."

"Not only are direct statements and representations of a misleading character objectionable, but any suggestion, hint or insinuation, direct or indirect, or design or device that may tend to convey a misleading impression should be avoided."

"Representations that are unwarranted on account of indefiniteness of a general sweeping character should be avoided."

"Testimonials, aside from the personal aspect given them by their letter form, hold out a general representation to the public for which the party doing the labelling is held to be responsible. The fact that a testimonial is genuine and honestly represents the opinion of the person writing it does not justify its use if it creates a misleading impression with regard to the results which the medicine will produce. No statement relative to the therapeutic effects of medicinal products should be made in the form of a 'testimonial' which should be regarded as unwarranted if made as a direct statement of the manufacturer."

"Statements on the labels of drugs guaranteeing them to cure certain diseases or money refunded may be so worded as to be false or fraudulent and to constitute misbranding. Misrepresentations of this kind are not justified by the fact that the purchase price of the article is actually refunded as promised."—*November, 1914, p. 283.*

JOURNAL OF AMERICAN MEDICAL ASSOCIATION.

Ventilation Theories Exploded:—The November 7th number of the above-named journal contains a symposium of papers on the subject of ventilation of hospitals, public halls and other places where numbers of people are brought together that proves about as surprising to many individuals as did Dr. Hatcher's paper on digitalis, reported for this meeting in October by Prof. LaWall, and for much the same reasons, namely, that they show the incorrectness of many of the ideas long held with reference to the subject. Very careful investigation has demonstrated that:—

1. The amount of oxygen, which in pure air amounts to 21%, may be reduced to 17% before the air becomes really harmful to breathe, yet rarely does it get lower than 20% in so-called poorly ventilated rooms.

2. Carbon dioxide in amount exceeding .04% has often been stated as being dangerous, but exhaustive experiments have shown that the amount may run over 1% without proving harmful, yet rarely does it exceed 0.4%, even in crowded rooms.

3. Odors do not necessarily indicate a poisonous condition of the air, and it is becoming generally well recognized that bacteria floating in the air are relatively unimportant as a source of disease, or at least of danger.

4. The depressing effects produced on individuals by the air of crowded or poorly ventilated rooms is due primarily to too high a temperature, to excessive humidity and to a lack of air circulation. Air low in oxygen content and high in carbon dioxide content, but kept in motion, is far less depressing than pure air not in motion.

Frederic Bass says that ventilation systems should aim to secure proper temperature, humidity regulation, keep air in motion and properly distributed, and prevent offensive odors from circulating.

The original articles and an editorial on the subject are well worth reading.

AMERICAN JOURNAL OF PHARMACY.

Germination of Belladonna Seed:—A. F. Sievers of the Bureau of Plant Industry, U. S. Department of Agriculture, reports the results of a series of experiments.

"The subjection of belladonna seed to freezing temperature accelerates their germination. Hence it is of benefit to sow the seeds in the fall."

"There seems to be no relationship between the size of the seed and its germinating power."
"The heavy seeds are by far the best."
"Color seems to be no criterion of the value of the seed as regards germinating power."
"Treatment of the seed with various strengths of sulphuric acid from one to sixty minutes did not appear to be of any great value."
"Treating the seeds with hydrogen peroxide was found to be of very material benefit."
"Scratching the seed coats, while of some benefit, was not nearly as beneficial as the peroxide treatment."—*November, 1914, p. 483.*

JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY.

Determination of Camphor and Certain Essential Oils when in Solution in Alcohol:—W. B. D. Penniman and W. W. Randal describe a rapid method. A definite volume of the solution is put into a Babcock bottle with a solution of calcium chloride and the mixture whirled; a definite volume of gasoline is added and the contents of the bottle again whirled; calcium chloride solution as added to bring dividing line to zero mark on neck of bottle, and a calculation is made from the volume of gasoline solution. Gasoline boiling between 40° and 60° C. is used. Good results were obtained from alcoholic solutions of camphor, oils of peppermint, lemon, orange, anise, nutmeg, cloves and wintergreen.—*November, 1914, p. 926.*

NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION BULLETIN.

Examinations of a Number of Samples of Spirit of Camphor:—About 125 samples were obtained from various sources, examined and the results tabulated for easy reference.

When the spirit is made by the U. S. P. process it contains 86% alcohol and 10% camphor. Of the lot examined one had only 53% alcohol, the others ranged between 71% and 93%, most of them running about 90%. One ran as high as 18.6% camphor, the others ranged between 6.8% and 12.7%, most of them ranging between 8.7% and 10.3%.—*November Special Bulletin, No. 12.*

THE DRUGGIST'S CIRCULAR.

The War Stamp Tax is thus commented upon:—"It is plain if the manufacturer does not pay the tax it will fall upon the retailer and it therefore behooves the latter to act accordingly."

Another editorial makes plea for support of the Stevens bill.

"An Improved Method of Testing Urine for Acetone," by F. E. Niece, a valuable paper, and *"Big Things in Pharmacy,"* a paper of much interest treating of the scientific progress of our calling, are two good articles in this issue.

AMERICAN JOURNAL OF PHARMACY.

"Belladonna and Hyoscyamus" is the title of a paper by E. L. Newcomb, which is begun in this issue.

"Commercial Papain" is the subject of an interesting paper by F. N. Heyl, C. R. Caryl and J. F. Staley.

"Pure Drugs and the Public Health," by M. I. Wilbert, Ph. D., is the title of an interesting paper.

CHEMIST AND DRUGGIST.

"A New Beta-naphthol Reaction" is described as follows:—A few drops of concentrated sulphuric acid are added to 1 cc. of diluted beta-naphthol solution, and to this is added 0.05 cc. of a 0.01 *per cent.* solution of sodium nitrite, when the above coloration is obtained. The reaction is sensitive in a solution containing 0.0002 *per cent.* of beta-naphthol. The coloration is supposedly due to a quinonoid derivative of beta-naphthol.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

An editorial comments on a recent bulletin of the Bureau of Chemistry which speaks of the importance of determining exactly the activity of digestive enzymes and ferments.

THE BULLETIN OF PHARMACY.

"Should the Salesman in Front or the Prescription Clerk in the Rear Receive the Higher Salary?" is an interesting symposium upon this question.

THE AMBULANCE CONSTRUCTION COMMISSION.

This is the first great war in which field motor-ambulances have been extensively used. It was inevitable that many defects should be found in existing types, and in various quarters experts began to ask whether something could not be done to standardize the patterns and to improve the type. At the instance of Mr. Henry S. Wellcome the founder of the Wellcome Bureau of Scientific Research, a Commission has been formed, and the names of members show at once that the matter is regarded as of first importance by those most intimately connected with the welfare of the wounded soldier.

Sir Frederick Treves, whose long experience and distinguished service specially fit him for the task, has consented to be the Chairman. The Admiralty is represented by the Director-General of the Medical Department, R. N., while the Quarter-Master-General to the Forces and the Acting Director-General, Army Medical Service, represent the War Office. The British Red Cross Society is, of course, represented by Sir Frederick Treves, and the St. John Ambulance Association by Sir Claude Macdonald and Sir John Furley. The remaining members are all experts. This Commission will first and foremost act as a judging committee for the award of prizes of the value of £2000 provided by the Wellcome Bureau of Scientific Research. These prizes are offered for the best designs of an ambulance-body which shall fit a standard pattern motor-chassis for field motor-ambulances. The last day for the receipt of competing designs is June 30, 1915. It is hoped that the competition will bring in a number of ingenious designs, from which the ideal field ambulance-body will be evolved.

It may be asked why the competition is restricted to designs for a body and not for the complete ambulance, including a chassis. The reason is that a chassis takes much longer to build than a body, and that, when war breaks out, it is impossible to get at short notice anything like a sufficient number of any one type of chassis. On the other hand, a standardized body to fit any chassis of approved dimensions can be constructed in numbers at comparatively short notice. And a perfected body is badly wanted to ensure complete comfort for the wounded.

It is hoped that the information obtained by the competition, and in other ways, will be published in some permanent form, available for future reference. Probably in addition to one design of special excellence, there will be submitted various ingenious suggestions which may be incorporated in the pattern design approved by the Commission. For these, a portion of the prize-money has been set apart. The first prize is of one thousand pounds, the second of five hundred, and the third of three hundred pounds. All details of conditions may be obtained from the Secretary, the Ambulance Construction Commission, 10 Henrietta Street, Cavendish Square, London, W. The competition is open to citizens of all nations.

SOME FACTS CONCERNING DRUG IMPORTATIONS.

H. H. RUSBY, M. D.

In the January number of the JOURNAL, Mr. J. W. England contributes a noteworthy article on "Drug Importations." With Mr. England's general conclusions and claims, as there outlined, I am in full accord. Too much care cannot be taken, either to insure uniform findings at different ports and at the same port on different occasions, or to give the importer the fullest opportunity of having the merits of his case sifted until the truth is established. On the other hand, there are statements in Mr. England's article that have no basis whatever in fact, and there are others which can be justly weighed only in the light of existing conditions to which he makes no reference. On page 57 he says:—"It is manifest that such a system gives a large scope for the use of personal influence and offers the possibility of gratifying private grudges. It is not asserted or intimated that any of the officials of the ports of this country are guilty of such nefarious practice, but it is certain that the system encourages such practice." It is a fact that the system in operation at the ports of entry of this country is devised to prevent the analyst from knowing anything about the personal or firm relations of the articles examined. It is very likely that at small ports, where little business is done and where very few persons are employed, such knowledge incidentally reaches the analyst, but this is not a design in the establishment of the methods. I presume that my own case does not differ materially from that of others at the larger ports. I have probably examined more than half of the crude drugs that have entered the United States during the last few years, and I have probably not known anything of the shipper, consignee or owner of a dozen shipments that I have thus examined. In case of the few exceptions, the knowledge has come to me purely by accident. If, after the signing and filing of my certificate a protest is made, such knowledge necessarily reaches me, but up to that time, all that I know of the article is its serial number, its professed character and the date on which I receive it. It is manifest that Mr. England's statements about the tendency of the system are wholly erroneous. While it may be believed by some persons that an analyst would, if he could, gratify a malignant spirit, it can hardly be believed, under the circumstances, that he could do so if he would.

As a matter of fact, the danger, if Mr. England's assumption were correct, would be rather in the direction of trying to save some one from a loss than of trying to cause one to occur. On the day of this writing, an intimate personal friend is condemned to a four hundred dollar loss, upon my certificate, because his importation contains 57% of adulterant, and it is a blessed relief that I am able to tell him that I knew nothing more of his sample than its date and number, until he himself informed me that it belonged to him.

Farther on, Mr. England asks, "Whoever heard of a Government official in any department, failing to sustain the scientific or technical report of a fellow official?" I think he will adopt a somewhat less cynical view upon my assurance that this is a common occurrence in the Bureau whose workings he is criticising. During

the month of January, I prevented two prosecutions by submitting a judgment that a fellow member was in error in his findings. I have in many cases rendered a favorable opinion of shipments that others had condemned, and vice versa. I have never known the slightest resentment or criticism to result from such action. My own judgments have been similarly disputed by others. Although in some such cases I have continued to believe my opinion to be the correct one, no thought of resentment has ever been excited. It is very likely that Mr. England's impressions on this subject have resulted from cases of the following kind. An importer who has always insisted upon his approval of the objects and purposes of the drug law, and who has given it his continued support, suddenly finds himself saddled with a shipment of the unfitness of which neither he nor any one else has any doubt. He may previously have condemned the importation of a shipment of far better quality, yet he now insists upon having his own importation released, and he resorts to every sort of misrepresentation of the case and to unjust criticism of the officer who condemned the goods, in his endeavor to escape the consequences of a mistake that he would have loudly condemned in any other. The rarest thing in all my experience, although I have known it to occur, is for an importer to exhibit a willingness to have the law justly enforced when this would result in a loss to him.

A far more serious question than any of the above is that of providing for judicial review of the findings of experts, which Mr. England strongly approves, and in which approval he is supported by many of the ablest lawyers, judges and legislators in the country. On general principles, it would seem clear that the importer should have this right and it is only the result of experience which can lead one to take the opposite view. Fortunately, we have an abundance of experience upon which to base our conclusions. All seizures of interstate shipments are subject to court review and many hundreds of such cases have been brought since the Federal Food and Drugs Act went into operation. At many of these trials, I have been a listener and I can recall scarcely any into which gross perjury did not enter. Were one to judge only by his observations of such cases, he would be likely to conclude that there is no other class of persons so dishonest as these expert witnesses. Leaving out of consideration all cases in which there is a fair ground of error and all differences of opinion, I do not hesitate to assert that in nearly all important cases one or more witnesses testify to what they know or fully believe at the time to be untrue. Our unfavorable opinion of these results must be qualified by the reflection that in most such cases, some experts have been asked to testify who have refused to do so, on conscientious grounds. Nevertheless, it is never difficult for an attorney to find one or more who are willing to thus degrade the profession. I have seen a chemist deny the pinkish-color which promptly appeared in the test performed in the court-room while he was looking on. I have known a witness, after having sworn to an entirely different result from that which he had previously obtained, to retire under instructions of his attorney, so that he would not see the result of the same test applied in the presence of a jury and in this way would escape being compelled to state the truth concerning it. I have heard a witness testify that all volatile oils contain alcohol in varying amounts, oil of peppermint about 90%!

In this case, because that witness occupied the chair of Materia Medica in a medical college, while the one opposed to him was in a college of pharmacy, it was only with great difficulty that the jury could be convinced that his testimony was incorrect. It is this ignorance of the jurors, their complete dependence upon the statements submitted, and their unfitness for grasping and interpreting technical facts, in which the danger of this method of deciding such questions principally resides. As to the tendency of the witnesses to speak correctly, we must consider whether government witnesses, with no other influencing motive than that of justly and impartially upholding the law, are more or less likely to testify truthfully than are men who have been offered a rich fee, often a temptingly large one, to say that for the saying of which they are to be paid.

After all, could there be a more satisfactory method of deciding contested cases than by a central reviewing board at Washington, properly constituted and manned? Such a board should of course be sufficiently large to contain experts in every subject coming before it, so that it would collectively represent a greater and more accurate knowledge and better judgment than that of any of those whose opinions are to be reviewed. I am not discussing whether this is or is not true at present, but merely submitting the opinion that this method, properly carried out, is the ideal one and that it is free from those objectionable features which are collectively represented by the term "bureaucratic."

HYPODERMIC INJECTION OF PHENOL FOR TETANUS.

In spite of treatment by antitetanic serum, cases occur in which the course of the disease does not appear to be checked. In one such case of traumatic tetanus recorded, in which the gravest symptoms developed even after the administration of two successive injections of serum, rapid amelioration and ultimate cure were obtained by the use of hypodermic injections of phenol. The dose given was 2 mils of a 5 per cent. solution, every two hours for six days, then every four hours for another five days, after which they were no longer needed. No urinary pigmentation and no albuminuria were observed, but a carbolic rash appeared about the seventh day of treatment. It is stated that the gross mortality in cases treated with antitetanic serum is from 61.8 to 78.9 per cent. Bacelli, the originator of the phenol treatment, gives the mortality by that method as only 17.4 per cent. Since the hypodermic injection of phenol in no way interferes with the action of serum previously administered as a preventive, it is worthy of extended use where the former appears to have failed and the disease shows signs of developing.—Drs. Purves Stewart and J. T. C. Laing (*B. M. J.*, 1914, 2, 1098).

Of General Interest

IMPORTANT ANNOUNCEMENT.

At a joint meeting held on January 27, of the California Pharmaceutical Association, the Retail Druggists' Association of San Francisco, and the local branch of the American Pharmaceutical Association, a large attendance gathered at the Hofbrau Cafe for luncheon. The object of the meeting, as explained by President Green of the C. Ph. A., was to get the different associations and committees working harmoniously for the entertainment of druggists as guests during 1915.

On account of the A. Ph. A. making its time of meeting August 9 to 14, inclusive, it was decided, after considerable discussion, to have the state meeting the preceding Friday and Saturday, August 6 and 7.

The Chair appointed the following committees:—

Committee on Entertainment. All the C. Ph. A. Committee, and four additional names from the Retail Druggists' Association of San Francisco, to be appointed by its President, and two from the local branch of the A. Ph. A. to be appointed by Dr. Schneider.

Committee on Permanent Headquarters. I. Beck, L. A. Farran and E. R. McDonald.

Committee on Finances. E. A. Baer, W. Guerich and J. M. Casselman.

President Gerdes of the Retail Druggists' Association spoke of the desire and willingness of the San Francisco druggists to work with the State Association, and make this meeting a memorable one. Mr. Guerich followed with an outline of the progress made by them, and suggested that the committee on permanent headquarters look into the matter of securing exhibits from manufacturers. Secretary Bowerman of the C. Ph. A. was instructed to confer with the Secretary of the Retail Druggists' Association and the Secretary of the local branch of the A. Ph. A. and arrange for a large get-together meeting in the early part of March—preferably at the Palace Hotel. Secretary Bowerman was also instructed to have the American Druggists' Syndicate and the Rexall Company arrange the time for their annual conventions to coincide with the aforesaid August datings if possible. Also to arrange with Mr. Barr, Director of Congresses for the Panama-Pacific International Exposition for a suitable hall and to give an invitation to the druggists of Alameda county to meet with us and give us the benefit of their counsel and support.

K. B. BOWERMAN.

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NECROLOGY.

The members of the Association will learn with deep regret and sympathy of the demise of Mrs. Henry P. Hynson which occurred at Roland Park, a suburb of Baltimore on December 14, last. Mrs. Hynson was an invalid for several years, but through her long illness she maintained a cheerful disposition and her passing-away leaves a void not easily filled. The Journal extends to our esteemed fellow-member and the family its most sincere sympathy in the deep loss they have sustained.

Proceedings of the Local Branches

BALTIMORE.

The annual meeting of the Branch was held Wednesday evening, January 20, in the Hynson and Westcott assembly room at Charles and Franklin streets with President E. F. Kelly in the chair.

In the absence of the Secretary, E. W. Hodson, Wm. J. Lowry, Jr., Acting Secretary, served in his stead.

Mr. Louis J. Burger, a Ph. G., but now a member of the Baltimore bar and a United States Commissioner as well as Professor of Pharmaceutical Jurisprudence in the Department of Pharmacy of the University of Maryland, delivered an address on the Harrison bill, prefacing his remarks by suggesting to Mr. Hynson that he give a brief historical sketch of the bill.

This brought out that the bill had its beginning as the result of the work of Hamilton Wright of Vermont, which culminated in the pigeon-holed Foster bill. This bill had some excellent features but it required so many onerous entries, records, reports.

etc. that it would have necessitated an endless amount of acumen and accuracy to obey its mandates and avoid its penalties.

This bill was not reported out of committee, but the desire for national legislation to prevent the increasing spread of the narcotic habit evil was so great, that the different interests involved finally got together, through the Drug Trade Conference, and the Harrison bill was the outcome.

Mr. Burger went through the law thoroughly and took up a section at a time, stopping to answer questions as he went along and when he had finished, led the discussion which followed.

Mr. S. L. Hilton, a member of the Washington Branch, who took quite an interest in the bill while on its way through Congress, reviewed it and laid particular stress on the necessity of every pharmacist registering promptly, following its requirements thoroughly, and keeping records accurately.

He brought with him a copy of the proposed regulations and although they have not been adopted officially, yet they are practically completed and tell what to do and how to do it, in order to comply with the law.

The bill was discussed from every angle and view-point and a rising vote of thanks was extended to Messrs. Burger and Hilton for their painstaking and thorough exposition.

The incoming president was authorized to appoint a committee of five on publicity with the idea in view of acquainting the public through the press as to the workings of the law and also to prepare them for some of the shocks which they might otherwise receive when some of their old favorites are refused them.

The following officers were elected for the 1915 term: President, E. W. Hodson; Vice President and Chairman of the Executive Committee, Chas. C. Neal; Secretary and Treasurer, Wm. J. Lowry, Jr.; Assistant Secretary, Olive B. Cole; Chairman Committee of Practical Pharmacy and Dispensing, Chas. L. Meyer; Representative in the Council, Henry P. Hynson. The rest of the committees to be appointed by the president

At the request of Dr. Chas. Caspari, Jr., the sense of the Branch was taken on the proposed change from Cubic centimeters to Milliliters in the coming Pharmacopœia and it was suggested, though by no means unanimously, that Milliliters should be used.

It was decided to change the meeting night to the third Wednesday of each month instead of Thursdays as heretofore.

WM. J. LOWRY, JR., Secretary.

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CINCINNATI.

The regular monthly meeting of the Cincinnati Branch, A. Ph. A., was held at Lloyd Library, December 12, 1914.

President E. H. Thiesing presided.

The minutes of the previous meeting were approved.

The President announced the death of Mr. Matthew M. Yorston, a life member of the A. Ph. A., which occurred December 18. Prof. J. U. Lloyd spoke very feelingly of the early struggles of Mr. Yorston in the field of Pharmacy.

M. M. Yorston conducted a drug store in this city for years and was popularly known, as the man who introduced base ball into Cincinnati, he being the founder of the first Red Stocking Club in this city.

He came to this country from Glasgow, Scotland in 1851. From New Orleans he went to Louisville and entered the drug business. In 1859 he came to Cincinnati and opened a store. Mr. Yorston ranked high in the profession and on numerous occasions was a contributor to journals devoted to pharmacy.

The President appointed Messrs. Jones, Heineman and Apmeyer to act as a committee to frame a suitable resolution of condolence on the death of Mr. M. M. Yorston.

The report of the Committee on Memorial of Mr. Geo. Merrell was presented by Prof. J. U. Lloyd and a copy was ordered sent to the family and spread upon the minutes of the Association—Mr. Chas. G. Merrell, who was present, responded feelingly.

Mr. C. G. Merrell, as Chairman of the Committee on Program, announced several interesting features for the coming meetings.

Mr. H. W. Jones, Chairman on Progress of Pharmacy, made a very exhaustive and interesting report treating of the effects of the European war upon the drug business of America, the cultivation of Golden Seal; the efforts to restrict the sale of Bi-chloride tablets; the new British Pharmacopœia; Insecticides and Fungicides, and many other

matters of vital importance. At the conclusion of his address he received a vote of thanks.

Prof. Julius Greyer read a paper on "Mineral Waters," which was full of interesting and instructive information to all the members. The paper evoked an interesting discussion which was participated in by Messrs. Lloyd, Fennel, Merrell, Freericks and the author of the paper.

The Branch recommended this paper for publication in this Journal.

CHAS. A. APMEYER, Secretary.

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CHICAGO.

The January meeting was held at the University of Illinois, School of Pharmacy Building, Friday evening, January 22.

In the absence of President Wells, Vice-President Day presided.

Secretary Gathercoal read a short report covering the year 1914 and stated that the Branch had held nine meetings during the year at each of which a profitable and interesting discussion of some subject pertaining to pharmacy had been held. He spoke of the wide publicity given the reports of the Branch meetings in the pharmaceutical press and expressed to its members the appreciation of the Branch. The financial report showed expenditures during the year of about $70.00 and a balance on hand of $28.90.

The following were elected to serve the Branch for the ensuing year:

President, Hugh Craig; First Vice-President, W. B. Day; Second Vice-President, C. A. Storer; Third Vice-President, Miss Jean Gordon; Secretary-Treasurer, E. N. Gathercoal; Chairman, Membership, L. L. Mrazek; Committee on Legislation, Jas. H. Wells; Committee on Practice, Wm. Gray; Committee on Medical Relations, Dr. Bernard Fantus; Committee on Publicity, Thos. Potts.

President Craig, introduced by Chairman Day, addressed the meeting on the very important subject: "The Administration of the Stamp Tax." Mr. Craig as editor of the Journal of the National Association of Retail Druggists, has personally requested of the Commissioner of Internal Revenue, rulings as to the stamp requirements on a number of articles commonly sold by druggists. The presentation and discussion of these rulings resulted in much practical information to the retail druggists present. In Mr. Craig's opinion the pharmaceutical organizations should unite in opposition to any further extension of this emergency law beyond its present limitation, i. e., the end of this year. He stated that the prospects for a continued improvement in business conditions were certainly good and that with such improvement any necessity for an extension of the stamp tax beyond the present year should disappear. However, pharmacists, through their organizations, should present a strong protest against any possible extension of the law.

Dr. James H. Beal followed Mr. Craig with an address on the Harrison Act. As a delegate to the Drug Trade Conference, Dr. Beal has acquired a very intimate knowledge of this law, in fact, framing some of the provisions himself.

In his introduction, Dr. Beal explained why, ostensibly, this act was a Revenue Measure, but that in real intent it aimed to exercise such a control over the handling of the narcotic drugs, opium and coca leaves, as to destroy the drug habit evil. He stated that the law as it now stands was a compromise not fully meeting the ideas of either the Government or the Drug Trade Conference.

The various phases of the law were presented as answers to a series of questions; the first question being: "Who shall or shall not be licensed under this law?' The answer brought out the fact that any person whether physician, pharmacist, dentist, veterinarian or not, upon the payment of the license fee of $1.00, might avail himself of the privileges of handling these narcotic drugs, while, of course, all who did deal in them must be so licensed. The real value of this portion of the law is in the publicity feature, for provision is made so that anyone may obtain a list of all such licensed persons and proper state and municipal officers may obtain copies of the quarterly reports that are required from all licensed persons, with such information, state and municipal anti-narcotic law violations may be rigidly prosecuted.

In his discussion of further questions, Dr. Beal made a number of prognostications as to the rulings of the Internal Revenue Department in reference to a number of interesting features. Thus he believes the Department will rule that licensed physicians may administer the prohibited drugs to the

patient at the bedside or in the home without keeping record of same but that when given to the patient in the office the proper records must be kept. Probably, as a protection to pharmacists, licensed physicians will be required to place on prescriptions calling for the prohibited drugs, the license number.

Dr. Beal was very sure that copies of such prescriptions could not be given and that such prescriptions could not be refilled and further that probably the refilling of prescriptions containing the prohibited drugs in excess of the excepted quantities and dispensed previously to March 1 next, would not be permitted.

One of the very onerous features of the original bill which required licensed persons to keep a balanced account of the sales of these prohibited drugs against their purchases was very fortunately replaced by the official order blank method. Now the pharmacist is required to keep on file for two years all orders for purchases, and all orders for sales and all prescriptions coming under this law and to report upon the same upon request of a revenue official.

Dr. Beal's address was most enthusiastically received and he was given a hearty vote of thanks.

About eighty pharmacists were in attendance.

E. N. GATHERCOAL, Secretary.

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NEW ENGLAND.

A meeting was held on January 13 in Boston in conjunction with another local pharmaceutical association.

Fifty-five men partook of the fine dinner provided after which several topics of more than usual interest to the drug world engaged their attention.

The new narcotic laws, state and national, were the advertised topics for discussion and because of the intimate knowledge of these measures on the part of two ex-presidents of the Branch, Charles F. Nixon and James F. Finneran, most of the members went home with a feeling of having learned a great deal.

Charles A. Stover explained the working of a druggists' wholesale company which was launched in Boston some time ago and which may become a considerable factor in the retail drug line as it has already proven profitable for those who are actively interested in it.

There were no formal papers presented at the meeting.

R. ALBRO NEWTON, Secretary.

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NEW YORK.

The regular meeting of the New York Branch was held at the New York College of Pharmacy, President Arny in chair, December 14, 1914. In the absence of Secretary McCartney, the chair appointed Jeannot Hostmann as secretary *pro tempore*.

The minutes of the previous meeting were approved.

The Chairman of the Committee on Legislation, Dr. Anderson, made a detailed and lengthy report on the status of anti-narcotic and stamp legislation and several rulings and decisions that had been given.

The report was discussed by Messrs. Bigelow, Diekmann and Diner.

Dr. Diekmann made a report on Pharmaceutical Progress which was discussed by Dr. Diner and Dr. Raubenheimer.

Chairman Bigelow, of the Mayo Dinner Committee, in reporting progress, announced that the dinner to President Mayo of the parent association would be held at the Chemist's Club on the evening of January 14, 1915 at 7:00 p. m.

Charles N. Lehman was elected a member.

Chairman Arny appointed Messrs. Bigelow, Rehfuss and Diner as a Committee on Nominations.

Dr. Wimmer then read his very interesting paper on "Emulsions as Colloidal Systems" which was copiously illustrated. The paper was discussed by Messrs. Diner, Niece, Raubenheimer, Mayer, Turner and Roemer.

After tendering a rising vote of thanks to Dr. Wimmer the meeting adjourned.

JEANNOT HOSTMANN, Secretary *pro tem.*

The following officers were elected at the regular meeting of the New York Branch held on January 11, 1915 at the New York College of Pharmacy Building:

President, John Roemer; Vice-President, J. Leon Lascoff; Treasurer, Joseph Weinstein; Secretary, Jeannot Hostmann; Member of the Council, Thos. DeA. McElhenie; Chairmen of Committees: Education and Legislation, Wm. C. Anderson; Progress on

Pharmacy, George C. Diekman; Membership, J. H. Rehfuss; Fraternal Relations, Louis Berger.

At this meeting papers were read by Dr. Wm. Jay Schieffelin and Dr. H. H. Rusby. Dr. Schieffelin's paper was on "Dosage of Radium Emanations." [Published in the "Journal" of December.]

JEANNOT HOSTMANN, Secretary.

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PHILADELPHIA.

The regular meeting of the Philadelphia Branch was held Tuesday evening, January 12 at the Medico-Chirurgical College.

President E. Fullerton Cook called the meeting to order at 8:15 p. m. The minutes of the last meeting were read and approved.

A communication from the chief of the Bureau of Chemistry of the Department of Agriculture, in answer to a resolution passed at the November meeting, concerning the definition of the word "dram" as expressed in General Information Opinion No. 66 issued July, 1914, was read. The full text of the letter is as follows:

December 16, 1914.

Mr. J. Ed. Brewer, Secretary, Philadelphia Branch, American Pharmaceutical Association, 1705 Cherry Street, Philadelphia, Pa.:

Dear Sir: Your letter of November 16, embodying a resolution adopted by your local branch relative to the use of the word "dram" has been received.

In construing the Net Weight Amendment upon which Opinion 66 was based, inasmuch as this has to do with articles of food, it was necessary to adopt the avoirdupois system. The dram is a unit of the avoirdupois system and also of the apothecary system, but its use under the apothecary system does not occur in the application of the Net Weight Amendment to foods. It is, of course, applicable in case of small quantities of drugs or other commodities sold in the pharmaceutical trade. In the apothecary system the word "dram" is used as a unit of weight and where used as a unit of measure, as it often is, it would appear that it should be designated as a fluid dram. A similar duplication appears in the use of the word "ounce" in liquid measure, and it has seemed desirable to this Bureau that where the term "ounce" occurred in liquid measure it should be designated as a fluid ounce reserving to the word "ounce" its designation as a term of the avoirdupois system.

So far as a practical application of the use of the word "dram," either under the avoirdupois system or apothecary system, or the term "fluid dram," is concerned, it would appear to be of minor importance as it denotes a unit which is below that which is expressed under paragraph (e) of Food Inspection Decision 154, copy of which is enclosed.

Trusting this will explain the position of this Bureau and that it will not be in conflict with the proper use of the term "dram" in the pharmaceutical trade,

Respectfully,

(Signed) C. L. ALSBERG,
Chief.

It was moved and passed that the letter be accepted and placed on file.

Under the heading of deferred business Prof. C. H. LaWall read the report of the committee appointed at the December meeting to draw up an answer to the letter from Pearson Publishing Co. concerning the article Pills and Piracy which appeared in the November issue of Pearson's Magazine.

Prof. F. E. Stewart moved that the report be submitted to the Council of the American Pharmaceutical Association with the request that they forward it to the Pearson Publishing Co. for publication. The motion carried.

The program of the evening was then taken up and Mr. Louis K. Liggett delivered an address on "Modern Drug Store Merchandising."

"The Current Review of Pharmaceutical Journals" was presented by Mr. John K. Thum.

As moved by Prof. F. E. Stewart a standing vote of thanks was given to Messrs. Liggett and Thum.

During the discussion of the papers Pharmacy from a professional aspect was interestingly presented by Mr. Franklin M. Apple, Prof. J. P. Remington and Prof. F. E. Stewart—after which the meeting adjourned.

J. ED. BREWER, Secretary.

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SAN FRANCISCO.

The San Francisco Branch met at 723 Pacific Building on the evening of January 12 to discuss "Qualifications to practice Pharmacy." The general opinion prevailed that any one intending to study pharmacy should have a definite and sufficient preliminary general education followed by systematic special instruction in a recognized pharmaceutical school. Further discussion

centered on the value of drug store experience and it was thought that only such experience should be valued as is obtained from actual practice in the performance of pharmaceutical work under the direction of experienced pharmacists. The mention of recognized pharmaceutical school also called for opinions on what constitutes a recognized school. In the discussion that followed, entrance requirements, faculty, general administration received due consideration.

Mr. J. L. Lengfeld spoke of Potassium Tellurite as an indicator of microbial life. Samples and literature were shown—these having been sent by the Research Department of Parke, Davis & Co.

Mr. William Milton Cordivenus applied for membership in the American Pharmaceutical Association and in the local branch. The S. F. Branch is pleased to add Mr. Cordivenus to its roll as he has always taken an active interest in pharmaceutical affairs.

The Branch adjourned to meet again on February 9, (second Tuesday), 723 Pacific Building. "Standardization of Pharmaceuticals" will be the topic for the evening.

CLARISSA M. ROEHR, Secretary.

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SAINT LOUIS.

A regular meeting of the Saint Louis Branch was held in the St. Louis College of Pharmacy, January 15, 1915. The meeting was called to order by Dr. O. F. Claus. After the disposal of the routine business the chair called upon Mr. A. W. Pauley, who presented his paper "Commercial Pharmacy—A Timely Topic." The paper elicited much discussion.

The Secretary read the paper entitled "The Sale of Poisons," contributed by Mr. Mittelbach, Booneville, Mo.

Dr. H. M. Whelpley gave a brief summary of the Harrison law.

Mr. P. L. Gain of East St. Louis, Ill. spoke in behalf of the Illinois Pharmaceutical Association meeting to be held at Centralia, June 14-16.

JULIUS C. HOFSTER, Secretary.

WASHINGTON, D. C.

The January meeting was held January 27, 1915, at the National College of Pharmacy. The subject presented for discussion was the new Imperial British Pharmacopœia, by M. I. Wilbert.

The subject was ably handled from the view-point of modern medicine and pharmacy as well as to its origin and history, most interesting data being given which clearly showed the chaotic condition of pharmacopœial standards in the British Empire previous to the issue of the British Pharmacopœia of 1914.

It was further pointed out that much dissatisfaction exists among the pharmacists owing to the fact that after the British Pharmaceutical Society had assisted and performed an enormous amount of work in connection with the revision, little if any credit has been given to the pharmacists.

The new British Pharmacopœia shows 43 additions and 160 deletions, it contains many of the newer remedies that will not be included in the coming revision of the U. S. Pharmacopœia, while such drugs as figs, prunes, sarsaparilla, sassafras, Co. Spirit of Ether and brandy have been deleted. It contains but 17 fluidextracts and 16 tinctures, plasters have almost lost their place among the official recognized medicaments, infusions and decoctions are however still popular.

The decided innovation in this revision of the British Pharmacopœia is the dropping of the Imperial system of weights and measurers and the adoption of the metric system. The sanctioning of the term *Mil* instead of Cubic Centimeter is in accord with modern scientific trend. Doses are given in both metric and Imperial systems. Here the same error has been made that was made in the U. S. P. VIII, accuracy being sacrificed as to the proper equivalents.

Official abbreviations are recognized in the appendix, which also contains many general processes for both chemical and other substances, including elaborate descriptions even histological characteristics, and most rigid requirements as to freedom from traces of arsenic and lead. Many assays for crude drugs and galenicals are given as well as for volatile oils.

It remains to be seen whether the publication will be a pharmacopœia for the entire

British Empire, as designed, as it has already been severely criticized and many of the provinces are very much dissatisfied with the revision.

Owing to the peculiar features of the copyright laws of Great Britain the British Pharmacopœia becomes official before publication, it is, however, placed on exhibition for a period previous to becoming official.

The paper brought out much discussion that was participated in by all present.

S. L. HILTON, Secretary.

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WEST VIRGINIA.

This, the youngest Branch of the A. Ph. A. organized at Morgantown, November 19, 1914. The following officers were elected:

President, W. A. Ream; Vice Presidents, G. O. Young, John Coleman, C. A. Neptune; Secretary, A. B. Berry; Treasurer, W. C. Price; Council Representative, Prof. Charles H. Rogers.

Prof. Rogers read an address from Secretary England entitled, "Dreaming and Doing." [Published in December issue.]

A vote of thanks was tendered Mr. England for his delightful address.

A resolution was adopted favoring the passage of a bill by the W. Va. Legislature creating the offices of state food and drug inspectors and the secretary was instructed to communicate with Governor Hatfield concerning the matter.

There was a good attendance at this, our first meeting and the prospects are bright for a vigorous, active branch.

The results thus far obtained are largely due to the push and energy of Prof. Rogers of the Department of Pharmacy of the West Virginia University.

The January meeting occurred on Wednesday evening, January 20, at Woodburn Hall, of the University of West Virginia.

After the dispatch of the regular business the members had the pleasure of listening to two very interesting and instructive addresses—one by Dr. A. Arken of the College of Medicine, W. Va. University, and the other by Prof. Chas. H. Rogers of the College of Pharmacy, W. Va.

Dr. Arken's subject was "Serums and Vaccines" and he told of their origin and modes of preparation and the successes attained by their use in the treatment of disease.

Dr. Arken is thoroughly acquainted with this subject and is a logical and forceful speaker.

Prof. Rogers spoke entertainingly on "Organic Chemistry."

Our membership embraces members from all parts of the state and there is no question of the success of the Branch and that it will have considerable influence in aid of the advance of Pharmacy in the state.

A. B. BERRY, Secretary.

Council Business

COUNCIL LETTER No. 14.

Philadelphia, Pa., January 15, 1915.

To the Members of the Council:

The following tentative program for the sixty-third annual meeting of the Association, to be held at San Francisco during the week of August 9 to 14, 1915, is submitted by the Committee on Program, the General Secretary, Secretary of the Council and Local Secretary:—

Monday:

9.00 A. M.	Meeting of the Council.
3.00 P. M.	First General Session.
	Meeting of Committee on Nominations.
	Meeting of Committee on Resolutions.
7.30 P. M.	House of Delegates.
9.30 P. M.	President's Reception.

Tuesday:

9.30 A. M.	Second General Session.
10.00 A. M.	National Association of Boards of Pharmacy.
2.00 P. M.	Scientific Section.
	Women's Section.
	Commercial Section.
	National Association of Boards of Pharmacy.
7.30 P. M.	Meeting of the Council.
	House of Delegates.
	Ladies' Theatre Party.

Wednesday:

9.30 A. M.	Section on Education and Legislation.
	Commercial Section.
12.30 P. M.	Luncheon of College Alumni.
	Luncheon to A. C. P. F. by California College of Pharmacy.
2.00 P. M.	Scientific Section.
	Section on Practical Pharmacy and Dispensing (and Pharmacopœias, Formularies, and Standards.)
	National Association of Boards of Pharmacy.
	American Conference of Pharmaceutical Faculties.

7.30 P. M.	Meeting of Council.
	National Association of Boards of Pharmacy.
	American Conference of Pharmaceutical Faculties.
	Ladies' Reception.

Thursday:

9.30 A. M.	Section on Education and Legislation.
	Scientific Section.
	Practical Pharmacy and Dispensing (and Pharmacopœias, Formularies and Standards.)
2.00 P. M.	Joint Session of Section on Education and Legislation, the A. C. P. F. and N. A. B. P.
	Historical Pharmacy.
	Women's Section.
7.30 P. M.	Meeting of the Council (Reorganization.)
8.00 P. M.	House of Delegates.
	Ladies' Reception.
	Visit to Chinatown.

Friday:

9.00 A. M.	Meeting of the Council.
10.30 A. M.	Final General Session.
1.30 P. M.	Luncheon and Adjourned Final General Session at the Inside Inn, Exposition Grounds.
3.00 P. M.	Go-as-you-please Exposition Visit.
6.00 P. M.	Luncheon at the Inside Inn, Exposition Grounds.
7.30 P. M.	Exposition Visit Continued—The Concessions and Illuminations.

Saturday:

The Local Committee suggests that Saturday be given up to local visits and excursions, arranging the parties to suit. Some may desire to visit Mt. Tamalpais, others the Exposition and still others may desire to go to the Muir Woods, the University in Berkeley, Golden Gate Park.

Comments and suggestions are invited by the Committee on Program.

The Philadelphia Branch, through a special committee, has drafted a reply to an article that recently appeared in Pearson's Magazine, claiming that pharmacists charged the public a higher price for drugs bought on prescription than for the same drugs bought in bulk. It is the wish of the local branch that the reply be passed upon by the Council before it is sent to Pearson's Magazine for publication, in response to their offer of space for the presentation of the pharmacists' side of the question.

The statement is as follows:—

The undersigned members of a committee appointed by the Philadelphia Branch, A. Ph. A., to draft a reply to the article entitled, "Pills and Piracy" published in Pearson's Magazine for November, 1914, hereby present a report in the shape of a dignified impartial statement of the facts justifying the fees charged by Pharmacists for professional services in the compounding of prescriptions.

Respectfully submitted

CHARLES H. LAWALL, Chairman,
FRANKLIN M. APPLE,
CHAS. LEEDOM.

Are Pharmacists' Fees Fair?

"Each in his place, by right, not grace,
Shall rule his heritage—
The men who simply do the work
For which they draw the wage."

The profession of pharmacy is one of antiquity and honor. In its beginning it was intimately associated with the practice of medicine. Later on it was closely connected with alchemy, out of which grew our wonderful modern science of chemistry. Pharmacy was evolved as a separate profession through necessities which are clearly apparent to a student of the subject. The physicians of early times soon found that the practice of their own profession was a difficult enough undertaking alone. They, therefore, assigned to the pharmacist, then usually called the apothecary, the necessity and duty of posting himself upon the knowledge connected with the preparation of medicines for administration, the physician reserving for himself the right to diagnose the disease and prescribe the remedy.

The pharmacist-alchemist soon found that the increased responsibilities placed upon him by the physician prevented him from devoting much time to researches in chemistry. In this way has come about the evolution of professional pharmacy of to-day. There are different kinds of pharmacists to-day, just as there are different kinds of physicians, magazine writers and legislators. The pharmacist of to-day stands between the physician and the public for the purpose of serving both; both need this service, and to serve both properly means to be specially educated for the purpose.

A pharmaceutical education of to-day takes little less time and money than a medical education and compares closely in these respects with the professional education of doctors of dental surgery and of doctors of veterinary medicine. The time required and the money expended for this education makes it necessary for the pharmacist to

charge a fee for his professional services in filling prescriptions.

Nobody who appreciates the responsible character of the service thus rendered by the conscientious pharmacist ever criticises him for this. Every day he has the dispensing of life or death in the hollow of his hand; every day he takes upon himself the responsibility for the success or failure of the treatment of the case by the physician, assuming, of course, that the treatment is correct in principle. For this conscientious service he has the satisfaction of knowing that he has done his duty, for the profits of the prescription department in the majority of drug stores are a minus quantity. The pharmacist, besides being a professional man, must needs also be a business man or he could not make a living. If the sale of medicines and the compounding of prescriptions only were permitted by pharmacists, many communities would be without a pharmacy, for our progress along lines of preventive medicine has largely reduced the use of medicines by the educated physicians of to-day.

It is not denied nor is it necessary to apologize for the fact that a higher charge is often made for substances dispensed upon prescriptions than when these substances are sold over the counter in the uncompounded condition. Take as a concrete example the hypothetical case of a prescription for sodium bicarbonate or baking soda, to be divided into ten or twelve equal doses, as contrasted with an order for ten cents' worth of baking soda. The order for ten cents' worth of baking soda can be filled by anybody who happens to be back of the counter; even the errand boy or the soda water clerk has sufficient intelligence to go to the compartment where ready prepared packages (previously put up and labeled) are kept, hand it over the counter and take the money, but when a prescription for the same substance is brought in it is a totally different matter. Under all existing pharmacy laws the filling of prescriptions can only be legally done by a registered pharmacist, who is the highest salaried clerk in the store; the entire transaction is handled by him, including the filling of the prescription, the labeling and wrapping of the package. This, with the accurate subdivision into a number of doses, takes the time of this educated, high salaried clerk. There is no more justification for censure of the pharmacist, who under these conditions makes a greater charge for the same substance than was made in the other transaction, than there is for the censure of the physician who writes such a prescription making necessary this expensive service, instead of simply telling the patient, as he might have done, to go to the drug store and get ten cents' worth of sodium bicarbonate and take a certain amount ever so often. The physician, on his part, has had to go through a long and expensive course of education to be able to tell that bicarbonate of sodium was the substance best suited to the patient's needs, and is therefore entitled to a fee for this knowledge.

This larger charge upon articles supplied upon prescriptions is not an invariable rule or practice. The public has come to expect and the practice of pharmacists for several generations has been to price prescriptions upon a flat rate according to the size of the container or the dosage represented. With the advent of many expensive remedies has come many instances where no profit is made or even a slight loss sustained in order to maintain this uniformity of procedure. Also, if existing conditions showed that pharmacists were amassing large fortunes or that they were even better off, upon the average, than members of other professional callings requiring equal educational attainments, there would be grounds for criticism, but when it is realized that all the laws upon the statute books affecting pharmacy, requiring, as they do, preliminary education, and in several states graduation from a pharmacy college of approved standing before examination for registration, it seems like carping criticism to find fault with the pharmacist on account of prescription prices, and to allege dishonorable motives is to do a grave injustice to a profession which has as honorable record as any and in whose history can be found many names of those who have been the world's pioneer discoverers of valuable products and of those who have benefited the human race without hope of fee or reward.

"They that have wrought the end unthought
Be neither saint nor sage,
But men who merely did the work
For which they drew the wage."

Motion No. 26 (Reply to Article in Pearson's Magazine). Do you approve of the above reply of the Philadelphia Branch and the sending of the same to Pearson's Magazine?

Motion No. 27 (Application for Membership). You are requested to vote on the following applications for membership:—

No. 59. John Fadalius De Yonckheere, 455 Van Dyke Ave., Detroit, Mich., rec. by Ernest R. Jones and J. H. Webster.

No. 60. James Clyde McGee Jackson, Miss., rec. by H. M. Faser and W. B. Day.

No. 61. Frank J. McNiff, Anthon, Iowa, rec. by R. A. Kuever and Wilber J. Teeters.

No. 62. Louis Dreibelbis, 37 W. Park St., Butte, Montana, rec. by W. B. Day and J. W. England.

No. 63. James Clarence Palmer, 4760 21st Ave., North East, Seattle, Wash., rec. by C. W. Johnson and Forest J. Goodrich.

No. 64. Thomas Call Armstrong, 80 River St., Cambridge, Mass., rec. by Elie H. LaPierre and William C. Acheson.

No 65. Paul Marcus Pfeiffer Merner, 6809 York Road, Philadelphia, Pa., rec. by Charles H. LaWall and E. Fullerton Cook.

No. 66. Dr. Arno Viehoever, Bureau of Chemistry, Dept. of Agriculture, Washington, D. C., rec. by W. S. Hubbard and L. F. Kebler.

No. 67. Lydia Franke Batdorf, 4125 West Belle St., St. Louis, Mo., rec. by J. W. Mackelden and H. M. Whelpley.

No. 68. Walter M. Chase, National Apartments, 931 Jefferson St., East, Detroit, Mich., rec. by H. M. Whelpley and J. W. Mackelden.

No. 69. Lusius Lamar Wilson, Tucumcari, New Mexico, rec. by W. B. Day and J. W. England.

No. 70. Charles J. Chapple, 2815 3rd Ave., N., Billings, Montana, rec. by William L. Bromme and Charles E. Mollet.

No. 71. A. C. Caldwell, 112th and Stephenson Ave., Chicago, Ill., rec. by William B. Day and E. N. Gathercoal.

No. 72. Julius H. Riemenschneider, 2916 Broadway, Chicago, Ill., rec. by W. B. Day and E. N. Gathercoal.

No. 73. Earl Frederick Lamb, 1605 East 47th St., Seattle, Wash., rec. by C. W. Johnson and Frances Edith Hindman.

No. 74. DeMott Clark Beach, 50 Ogden St., Hammond, Indiana, rec. by Albert H. Dewey and W. F. Gidley.

No. 75. Max Menzel, Pipestone, Minn., rec. by E. L. Newcomb and F. J. Wulling.

J. W. ENGLAND,
Secretary of the Council.

The Pharmacist and the Law

THE MULFORD PROTEST AGAINST INCREASE IN FREIGHT RATES.

The Western Traffic Association having withdrawn classification on drugs and chemicals in less than car-load shipments, the result of which action is an increase of 85% in freight-rates on such goods, the H. K. Mulford Company of Philadelphia has filed the following petition with the Interstate Commerce Commission:—

THE INTERSTATE COMMERCE COMMISSION.

H. K. Mulford Company against Pennsylvania Railroad Company, Pennsylvania Company, Chicago, Milwaukee & St. Paul Railway Company, Baltimore & Ohio Railroad Company, Chicago, Burlington & Quincy Railroad Company, and Northern Pacific Railway Company.

PETITION.

The petition of the above-named petitioner respectfully represents:

I.

That your petitioner is a corporation duly incorporated under the laws of the State of Pennsylvania, and its business is that of a manufacturing chemist, which it carries on in the city of Philadelphia, State of Pennsylvania.

II.

That the respondents are common carriers engaged in the transportation of passengers and property by continuous carriage or shipment, wholly by railroad, between points in different states of the United States, and particularly they are engaged in the carriage of drugs and chemicals from the city of Philadelphia, in the State of Pennsylvania, to points on the Pacific Coast, and are subject to the provisions of the Act to Regulate Commerce, approved February 4, 1887, and acts amendatory thereof or supplementary thereto.

III.

That under tariffs filed with your body on October 1, 1914, and which went into effect on November 15, 1914, the respondents, the Pennsylvania Railroad Company, the Pennsylvania Company and the Chicago, Milwaukee & St. Paul Railway Company, have

joined in a joint rate for the carriage of drugs and chemicals in less than carload lots over a through route from the city of Philadelphia, in the State of Pennsylvania, to points on the Pacific Coast, of $3.70 per hundred pounds, and the respondents, the Baltimore & Ohio Railroad Company, the Chicago, Burlington & Quincy Railroad Company and the Northern Pacific Railway Company, have joined in a similar joint rate.

IV.

That the said charge is an increase of 85% on the charge imposed prior to the effective date of the above-mentioned tariff and is unjust and unreasonable.

V.

That your petitioners, as shippers of drugs and chemicals from the city of Philadelphia to points on the Pacific Coast have, by reason of the facts stated in the foregoing paragraph, been subjected to the payment of rates of transportation which were, when enacted, and still are, unjust and unreasonable and are in violation of Section 1 of the Act to Regulate Commerce.

WHEREFORE your petitioner prays that the respondents may be severally required to answer the charges herein: that after due hearing and investigation an order be made commanding said respondents and each of them to cease and desist from the aforesaid violation of said Act to Regulate Commerce, and establish and put in force and apply as maximum rates in future to the transportation of drugs and chemicals in less than carload lots between the shipping and destination points named in Paragraph III hereof, in lieu of the rates named in said paragraph, such other rates as the Commission may deem reasonable and just, and also pay to your petitioner by way of reparation for the unlawful charges hereinbefore described such sums as, in view of the evidence to be adduced herein, the Commission may consider your petitioner entitled to, and that such other and further order or orders be made as the Commission may consider proper in the premises and petitioner's cause may appear to require.

Dated at Philadelphia, Pa., January 15, 1915.

H. K. MULFORD COMPANY.

Address: 412 to 432 South Thirteenth Street, Philadelphia, Pa.

HARRISON ANTI-NARCOTIC LAW.

The National Wholesale Druggists' Association has issued a circular letter to its members from which we excerpt the following information regarding the requirements of this law.

PRINCIPAL FEATURES OF THE HARRISON BILL.

The law covers opium, coca leaves, and any compound, manufacture, salt, derivative or preparation thereof.

Every person, firm or corporation, who produces, imports, manufactures, compounds, deals in, sells, distributes or gives away any of the articles covered by the law, must register with the collector of Internal Revenue in his District and pay a special tax of $1 per year. The special tax will be imposed for the period from March 1 to June 30, 1915 (which is the close of the special tax year), and the amount to be paid is 34 cents. After that date, tax will be imposed for the official year and payment will be $1.

Employees, while acting within the scope of employment by the taxpayers, will not be required to register or pay the special tax. Every person, partnership, association, company or corporation (other than a physician, dentist or veterinarian), who has more than one place of business where any of the drugs described are made, stored, or dispensed, must make a separate application for registry and pay special tax for each such place of business.

Sales of the drugs covered by the law may be made only to parties, whether manufacturer, wholesaler, retailer or doctor, on order-blanks provided by the collector of Internal Revenue. The buyer and the seller shall each preserve his copy of the order, and the law requires all such orders (both original and duplicate) to be retained on file for a period of two years, and they must be filed in their numerical order; that is, according to the registry numbers. Dealers are not compelled to fill orders for narcotic drugs, as the law provides what he shall do in case the order is accepted.

It is unlawful for any person to obtain by means of said order-blanks any of the aforesaid drugs for any purpose other than the use, sale or distribution thereof by him in the conduct of a lawful business in said drugs or in the practice of his profession. Orders by telegraph or telephone cannot be filled.

Order-blanks will be issued by collectors of Internal Revenue in tablets or books of ten or fifty blanks each. The charge for such blanks (including original and duplicate) will be at the rate of $1 per hundred. They will be issued only to persons who have registered and paid the tax, and any one other than the dealer to whom they are issued using them will violate the law.

Dealers may not sell to physicians on prescription when the drugs are intended for dispensing or prescribing, as all physicians, dentists and veterinarians, will be required to register under the law and order such drugs on the official order-blanks. Prescriptions written by physicians and filled either by the druggist or physician, must bear the name of the physician signing the same, and his registry number, and the name of the person for whom such prescription is filled. Such prescriptions must be preserved for a period of two years, and be readily accessible to the inspecting officers of the Government, State, District or City in which he is located.

Every person, firm or company *dispensing directly to consumers,* must on March 1, 1915, prepare and keep on file an inventory of all drugs covered by the law on hand at that date; no special form of inventory is required, and it must be verified by oath not later than March 5, 1915.

Every person registered under the act is required on demand of the collector of his district to render a sworn statement of the quantity of such drugs received by him during a period not exceeding three months preceding such demand. The said statement to show the names of the persons from whom the said drugs were received, the quantity received, and the date thereof. This record can be readily compiled from the duplicate orders on file.

It is a crime under the act for any person who is not registered and has not paid the tax to have in his possession or under his control any of the aforesaid drugs, and such possession will be construed as presumptive evidence of a violation of the act. This provision, however, does not apply to any employees of a registered person or to a nurse under the supervision of a physician, dentist or veterinary surgeon registered under the act, provided such possession is by virtue of his employment or occupation, and not on his own account.

United States, State, county, municipal, territorial and insular officers lawfully engaged in making purchases respectively for the army and navy, the Public Health Service, and Federal, State, county and municipal, territorial, and insular hospitals or prisons, are exempted from the provisions of the law; and sales, deliveries, etc., to these officers and institutions are not affected by the law; but private hospitals and institutions are not exempted.

Section 6 of the law exempts from its provisions all preparations and remedies containing stipulated quantities of the prohibited drugs, but it should be carefully noted that these exemptions do not apply to cocaine or any of its salts, whether alone or in combination with other drugs, and all sales of cocaine in any or every form whatever must be made in pursuance of a written order on the blanks supplied by the collector. It will also be noted that while the title of the law and the first section of it does not mention alpha or beta eucaine, Section 6 provides that the exemptions shall not apply to "liniments, ointments and *other preparations* which contain cocaine or any of its salts or alpha or beta eucaine or any of their salts or any synthetic substitute for them."

It should be remembered that the Harrison law is a taxation or revenue measure and applies to all transactions in every State, city or town, and is not confined to sales in interstate traffic. It should also be borne in mind that it is necessary for all dealers to continue to observe State and municipal laws regarding the sale of narcotic and poisonous drugs. Attention is also called to the fact that there is no advantage in retailers or dispensers purchasing large quantities of the prohibited drugs prior to March 1, as it will only add to the work of reporting stocks on hand in the inventory required by the regulations to be taken on that date.

The penalty for violating any of the provisions of the law is a fine of not more than $2,000 or imprisonment for not more than five years, or both, as well as the probable large expense incurred when suit is brought.

LISTS OF ARTICLES COMING UNDER THE PROVISIONS OF THE LAW.

Following find lists of drug products affected by the law. We have endeavored to secure as complete lists as possible of drugs, pharmaceutical preparations and proprietary medicines which must be sold only on presentation of the proper order-blanks. The lists are, of course, not complete or entirely accurate, but are sent out for the purpose of assisting persons registered under the act in segregating the articles coming under the operation of the law. In view of the fact that the Food and Drugs Act of June 30, 1906, requires that any of the drugs mentioned in this law shall be shown on the label, dealers should be able to determine without much difficulty whether a particular item comes within the provisions of the law or not.

PHARMACEUTICALS.

List furnished by Eli Lilly & Co. It is submitted subject to changes, omissions and corrections:

Fluid Extracts—Coca, U. S. P.; Coca, Soluble; Kola, Compound; Opium, Camphorated; Opium, Concentrated; Poppy Heads; Saw Palmetto, Compound; White Pine Compound, for making Syrup; White Pine Compound, Red, for making Syrup; Wild Cherry, Compound.

Pills—Alterative; Ammonium Muriate, Compound; Anodyne; Antispasmodic; Blue Mass, Compound; Calomel and Opium; Camphor, Compound; Camphor, Opium and Hyoscyamus; Camphor, Opium and Lead Acetate; Camphor, Opium and Tannin; Coca and Phosphorus, Compound; Coca, Phosphorus and Strychnine; Cocaine Hydrochloride (all sizes); Codeine (all sizes);

Codeine Sulphate (all sizes); Diaphoretic; Diarrhea Pellets; Heims; Heroin (all sizes); Ipecac and Opium (all sizes); Mercury Protiodide and Opium; Mercury and Chalk, No. 2; Morphatropia (all sizes); Morphine Sulphate (all sizes); Morphine Valerianate (all sizes); Neuralgic, Brown-Sequard; Neuralgic, Brown-Sequard, Half Strength; Neuralgic, Gross, N. F.; Neuralgic, Gross, Half Strength; Neuralgic, Gross, Pink Granules; Opium, Extract (all sizes); Opium, U. S. P.; Opium, Powdered (all sizes); Opium and Camphor, N. F.; Opium and Lead Acetate (all sizes); Opium and Silver Nitrate; Opium, Tannin and Lead; Phenacetine and Quinine, Compound; Quinine and Dover's Powder; Syphilitic, Ricord, Modified; Terpin Hydrate and Codeine.

Hypodermatic Tablets—Anti-asthmatic, Timmerman; Apomorphine Hydrochloride (all sizes); Apomorphine and Strychnine; Cocaine Hydrochloride (all sizes); Codeine Phosphate (all sizes); Codeine Phosphate without Sugar (all sizes); Codeine Sulphate (all sizes); Codeine Sulphate without Sugar (all sizes); Diacetylmorphine Hydrochloride, (all sizes); Eserine and Morphine; Eucaine Hydrochloride (all sizes); Eucaine Lactate; Heroin Hydrochloride (all sizes); Hyoscine, Compound, Lilly; Local Anesthetic, Dental (all sizes); Morphine Hydrochloride (all sizes); Morphine Meconate (all sizes); Morphine Nitrate (all sizes); Morphine Sulphate (all sizes); Morphine and Atropine (all sizes); Morphine, Atropine and Strychnine (all sizes); Morphine and Hyoscine; Morphine and Strychnine (all sizes); Morphine, Compound, Tupper; Nitroglycerin, Compound, Lilly; Novocain; Scopolamine and Morphine (all sizes.)

Soluble Tablets for Local Anaesthesia—All Strengths.

Ophthalmic Tablets—Cocaine Hydrochloride.

Veterinary Hypodermatic Tablets—Cocaine Hydrochloride (all sizes); Colic, Knowles; Morphine Sulphate (all sizes); Morphine and Atropine (all sizes.)

Tablets—Acetanilide, Compound No. 7; Acetanilide, Compound with Codeine No. 1; Acetanilide, Compound with Heroin; Acetanilide and Sodium, Compound with Codeine; Acetphenetidin, Compound with Codeine; Alum, Compound No. 1, for Injections; Alum, Compound No. 2; Ammonium Chloride, Compound with Codeine; Ammonium Chloride, Compound with Heroin; Ammonium Salicylate and Acetanilide Compound; Ammonium Salicylate and Acetanilide Compound, Half Strength; Anodyne, Expectorant, Bolton; Anodyne, Insant, Waugh; Anodyne, Lilly; Anodyne, Mild; Antiasthmatic, Stevens; Antibronchitis; Anticold; Anticold, Gordon; Antidiabetic; Antivomiting (Nos. 1 and 2); Apomorphine Hydrochloride (all sizes); Aspirin and Codeine; Aspirin, Compound, Kyle; Astringent Wash; Atropine-Aconite, Compound; Bismuth and Opium; Bismuth, Opium and Carbolic Acid; Blue Mass, Compound; Boric Acid and Potassium, Compound; Bronchitis, Delafield; Brown Mixture (all sizes); Brown Mixture and Ammonium Chloride; Calomel and Dover's Powder (all sizes); Camphor, Opium and Tannin; Cardiac, Waldstein; Chlorodyne; Chlorodyne, Half Strength; Coca, Fluid Extract; Cocaine Hydrochloride (all sizes); Cocaine and Cubeb, Compound; Codeine (all sizes); Codeine without Sugar (all sizes); Codeine Phosphate (all sizes); Codeine Sulphate (all sizes); Codeine Sulphate without Sugar (all sizes); Cold No. 3; Cold No. 3 with Aloin; Cold No. 5; Cold No. 6; Cold, Laxative, Lilly; Cold, Preferred; Copper and Opium; Coryza, No. 1; Coryza, Bishop; Coryza, No. 2; Coryza, improved, Lilly; Coryza, Kenyon; Coryza, Smith; Cough No. 1; Cough No. 2; Cough, Infant; Creosote, Compound; Diabetes; Diacetylmorphine (all sizes); Diacetylmorphine Hydrochloride (all sizes); Diaphoretic, Whitford; Diarrhea No. 2; Diarrhea No. 3, Sullivan; Dover's Powder (all sizes); Enteritis, Haskell; Expectorant, Rankin; Expectorant, Tonic; Febrifuge; Fever; Fever, Kenyon; Follicular, Tonsillitis; Gastritis; Helonias, Compound, Vaginal; Heroin (all sizes); Heroin Hydrochloride (all sizes); Heroin and Terpin Hydrate (all sizes); Hydrastine, white Alkaloid, Compound; Lead and Laudanum; Leucorrhea Mercury with Chalk and Dover's Powder; Mercury Protiodide and Opium; Morphine Acetate (all sizes); Morphine Hydrochloride (all sizes); Morphine Sulphate (all sizes); Morphine and Atropine (all sizes); Morphine and Belladonna; Naso-Pharyngeal; Nausea No. 2; Neuralgic; Neuralgic, Brown-Sequard; Neuralgic, Brown-Sequard, Half Strength; Neuralgic, Dunlap; Neuralgic, Gross; Neuralgic, Gross, Half Strength; Neuralgic, Headache, Myers; Opium, Camphorated, Tincture (all sizes); Opium, Deodorized, Tincture; Opium, Powdered (all sizes); Opium, Tincture U. S. P. (all sizes); Opium and Camphor; Opium, Ipecac and Blue Mass; Opium and Lead Acetate (all sizes); Paregoric, Compound; Potassium Chlorate and Cocaine, Voice Tablet; Quinine and Dover's Powder; Rheumatism Liggett; Salicylic Acid and Morphine; Salol, Compound; Sun Cholera; Syphilitic; Terpin Hydrate and Codeine (all sizes); Terpin Hydrate, Compound, Brockbank; Terpin Hydrate and Heroin, Compound, Lilly; Throat, Mentholated, Lilly; Throat, Quinlan; Tully's Powder (all sizes); Uterine Astringent and Antiseptic; Voice.

Dispensing Tablets—Cocaine Hydrochloride (all sizes); Codeine (all sizes); Codeine Phosphate (all sizes); Codeine Sulphate (all sizes); Heroin Hydrochloride (all sizes); Morphine Hydrochloride; Morphine Sulphate (all sizes.)

Compressed Lozenges—Glycyrrhiza and Opium U. S. P.; Pectoral, Jackson; White

Pine, Compound Cough Lozenges; Wistar's Cough Lozenges.

Elixirs—Ammonium Valerianate and Morphine; Celery, Compound; Celery, Kola and Coca, Compound; Chloroform, Compound, N. F.; Coca; Coca, Compound; Creosote and Terpin Hydrate, Compound; Heroin; Heroin, Compound; Heroin and Terpin Hydrate; Kola, Compound; Morphine Hydrochloride; Opium, Deodorized; Pectoral, or Pulmonic, Elixir; Saw Palmetto, Compound; Saw Palmetto and Pichi, Compound.

Syrups—Codeine Phosphate, Compound; Dover's Powder; Heroin, Compound; Tolu, Compound; White Pine, Compound, with Heroin.

Wines—Coca, Aromatic; Coca, Beef and Iron; Coca and Celery; Coca with Hypophosphites, Lilly.

Cordials—Calisaya, Ferrated; Coca.

Tinctures—Ipecac and Opium, U. S. P.; Opium, U. S. P.; Opium, Compound, N. F.; Opium, Deodorized, U. S. P.

Solid Extracts—Coca Leaves.

Powdered Extracts—Coca Leaves; Opium, U. S. P.; Warburg's Tincture; Warburg's Tincture, without Aloes.

Elastic Filled Capsules—Bronchial, No. 1.

Ampoules—Cocaine Hydrochloride; Morphine and Atropine (all strengths); Morphine and Hyoscine; Morphine Sulphate (all strengths.)

Chlorodyne.

Compound Cerebral, Sedative No. 1.

Dental Preparations—Cocaine Points; Devitalizing Fibre; Local Anesthetic Solution.

Glycerites—Heroin, Compound.

Inhalants, Lilly—No. 4.

Liquids—Peptones with Coca.

Ointments, Ophthalmic—Holocaine Hydrochloride.

Oleates—Cocaine, U. S. P.; Morphine, 10 per cent.

Powders—Ipecac and Opium, U. S. P.

Solutions—Cocaine Hydrochloride, 2 per cent. with Acetoform; Cocaine Hydrochloride, 4 per cent. with Acetoform.

Solvents—Alum, Compound No. 1; Alum, Compound No. 2; Astringent Wash; Cocaine Hydrochloride (all sizes); Lead and Opium; Naso-Pharyngeal; Uterine Astringent and Antiseptic; Hydrastine, White Alk., Compound.

Tablets, Lagmal—Leucorrhea, Improved; Morphine and Belladonna; Uterine, Compound.

COCA LEAVES, OPIUM AND DERIVATIVES

Antispasmin; Apocodeine; Apomorphine Hydrochloride; Coca Leaves, Cocaine and Salts; Codeine and Salts; Codeonal; Dionin; Dover's Powder; Extract Opium; Meconin; Morphine and Salts; Narceine; Narcophin; Narcotine; Opium Powder, Gran and Natural; Pantopon; Papaverine Alkaloid and Salts; Paracodin; Peronin; Stypticin; Styptol.

PATENT MEDICINES.

Remedy, Kansas City; Balsam, Van Werts; Balsam, S. Arnolds Diarrhœa; Remedy, Hegemans Diarrhœa; Chlorodyne, Browns; Pectoral, Wynkoops Iceland; Powder, Daniels Liniment; Syrup, Woods Soothing; Syrup, Jardells Co. Rhei and Blackberry; Compound, Davids Sedative for Cough; Lung Kuro; Anodyne, Browns; Pain Extr., Inghams, 25 cents; Liniment, Bancrofts; Tablets, Waterburys Menth. Cough; Syrup Fahrneys Teething; Rectal Suppos., Liquozone.

PHARMACEUTICALS COMING WITHIN THE EXEMPTION PROVIDED IN THE HARRISON ANTI-NARCOTIC LAW.

Pills—Warburg's Tincture (all sizes); Warburg's Tincture without Aloes (all sizes.)

Tablets—Cholera Infantum No. 2; Colic Infantile; Pinus Alba, Compound; Warburg's Tincture (all sizes); Warburg's Tincture without Aloes (all sizes.)

Lozenges—Brown Mixture; Brown Mixture and Ammonium Chloride.

Elixirs—Acetanilide, Compound, Special; Codeine Sulphate; Red Gum, Compound; Terpin Hydrate and Codeine; Terpin Hydrate, Compound.

Syrups—Codeine, Compound, Burr; Lobelia and Tolu Compound; Tar, Tolu and Wild Cherry; Terpin Hydrate, Codeine and White Pine; White Pine, Compound, Lilly (and all variations); White Pine, Compound, N. F.; White Pine, Compound, with Codeine.

Miscellaneous—Cordial Antiperiodic; Tincture Opium Camphorated, U. S. P.; Tincture Warburg's, N. F.; Tincture, Warburg's, without Aloes, N. F.; Tincture, Warburg's, Modified; E. F. C. Warburg's (all sizes); E. F. C. Warburg's without Aloes (all sizes); Bronchial Sedative, Palmer; Confects Brown Mixture; Liniment Rubefacient; Liquid Coca Leaves free from Alkaloids; Mixture Cholera Infantum; Ointment Hemorrhoidal, Lilly; Ophthalmic Ointment, Dionin 2 per cent.; Ophthalmic Ointment, Dionin and Atropine; Pruniocodeine.

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SALE OF DRUG-STORE STOCK—FRAUD—EVIDENCE.

In an action of trespass on the case it was sought to recover, as damages, the difference between the actual cost price of certain drug-store stock of goods and fixtures, including a soda fountain, and the cost thereof as represented by the seller at the time of the purchase. The action was based upon alleged false and fraudulent representations of the actual cost price of the fixtures and supplies. The deal was for the capital stock of the

corporation, and not in the specific fixtures or drug supplies. The plaintiff alleged reliance on the truth of the representations. In West Virginia, the plaintiff must prove reliance upon misrepresentations as well as their falsity, though, in some states, reliance is inferred. It was held that the plaintiff had failed to show such reliance. On the contrary, he admitted that he had had twelve years' previous experience in the drug business, had examined the soda fountain, and thought its cost was about what the company had actually paid for it, according to the defendant's representations. Likewise, he also admitted he examined the other fixtures and the entire stock of goods, and that, in his opinion, the cost named by the defendant was not excessive. To quote his language: "From the way the stock looked, and the way it was fixed down in the basement, and all, it certainly appeared to me that there was that much stock," meaning, of course, according to the valuation represented to him. These admissions, it was held, tended to negative reliance by him on the verity of the defendant's representations.

Nor did the plaintiff show, except inferentially, in what respect or to what extent he suffered injury as the result of the negotiations. He admitted that he did not discover the defendant's deception until nearly three years after the purchase. During that time he made no effort to ascertain the actual cost of any of the various items discussed, pending the negotiations. The information secured as a basis for the action, he obtained from the traveling salesman of one of the furnishing companies, who, he says, was frequently at his store during these three years, and through communications by him with the other company. This information was available from the same sources before the final consummation of the deal. This fact alone would not bar his recovery, but it was held to suggest an apparent satisfaction with the transaction. By reason of want of necessary proof, judgment for the defendant was affirmed.

Keller v. Roetting, West Virginia Supreme Court, 82 S. E., 755, decided September 15, 1914.

WAR DEPARTMENT.

List of changes of stations covering period ending January 31, 1915, in the cases of Sergeants First Class, and Sergeants, Hospital Corps.

SERGEANTS FIRST CLASS.

Max Weinberg, from the Attending Surgeons Office Port of Embarkation to Ft. Banks.

Ivan N. Karlson, from Field Hospital Co. No. 5 to Jefferson Barracks.

Earl J. Down, from Jefferson Barracks, to Field Hospital Co. No. 5.

Otto A. Tandrop, from Fort Bliss, to the Philippines Department.

Thomas McKelvey, from Ambulance Co. No. 5, to the Philippines Department.

John R. Sands, from Fort Banks, to Ambulance Company No. 5.

Romanus A. LaGrinder, from Plattsburg Barracks, to West Point.

William C. Bonner, from West Point, to the Hawaiian Department.

Dorsey W. Thickstun, from Ft. Huachuca to the Hawaiian Department.

William F. Murphy, from Ft. Missoula, to Ft. Huachuca.

Burton Hardenbrook, from Ft. Leavenworth, to Ft. Missoula.

Samuel Smelsey, from Philippines Department, to Ambulance Company No. 2.

Harry A. R. Kroger, from Casually at Ft. McDowell, to Second Division for assignment.

Charles H. Jorte, from 7th Inft. Hospital 2nd Div., to the Philippines Dept.

Welcome N. Powell, from Ambulance Company No. 2, to Letterman General Hospital.

SERGEANTS

Meyer McC. Dougherty, from Ft. Screven, to Ft. McPherson.

Bruce D. Gill, from Ft. McPherson, to Ft. Screven.

Joseph Livingston, from Ft. Worden, to Walter Reed, General Hospital.

Michael Fitzgerald, from Ambulance Company No. 8, to Presidio of San Francisco.

John Aue, from Ft. Monroe, to Front Royal Remount Depot.

Frank C. Wagner, from Front Royal Remount Depot, to Ft. Monroe.

Patrick Darby, from Colorado Strike Zone, to Ft. Robinson.

Fitz. W. Donoho, from Ambulance Company No. 7, to Ft. Winfield Scott.

John A. Baker, from the Philippines Department to Ft. McDowell, for discharge.

Lewis B. Houston, from the Transport "Dix," to the Hawaiian Department.

Edwin R. Arndt, from Vancouver Barracks, to Ft. Missoula.

Fay S. Elzey, from Ft. Casey, to Ft. Worden.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

W. H. RIESS,
From Office Div. Surgeon 2nd Div. Texas City, Texas.
To Ft. Howard, Md.

J. K. MEHRTENS,
From Food & Drug State Laby., Berkeley, Cal.
To Residence unknown.

I. B. PHILLIPS,
From Medical Supply Depot, Manila, P. I.
To Residence unknown.

J. J. WHITE,
From 207 Southern Bldg., Washington, D. C.
To 130 First St., N. W., Washington, D. C.

J. A. DORJAHN,
From Blue Island, Ill.
To 170 Burr Oak Ave., Blue Island, Ill.

H. W. DREYFUS,
From 4806 West End Ave., Chicago, Ill.
To 6401 Chicago Ave., Oak Park, Ill.

BERTHA G. HUFFMAN,
From 2107 Market St., St. Louis, Mo.
To 4311 Forest Park Blvd., St. Louis, Mo.

LOUIS LIBERSTEIN,
From 1126 N. Taylor Ave., St. Louis, Mo.
To 223 S. Euclid Ave., St. Louis, Mo.

G. H. ADAMICK,
From 189 N. Madison St., Chicago, Ill.
To 182 N. Madison St., Chicago, Ill.

HERMAN ENGELHARDT,
From 2910 Garrison Ave., Baltimore, Md.
To 2912 Garrison Ave., Baltimore Md.

T. C. BASYE,
From 323 Main St., Rockport, Ind.
To 318 Main St., Rockport, Ind.

F. H. FRICKE,
From 1637 N. 19th St., St. Louis, Mo.
To 3218 Hebert St., St. Louis, Mo.

MARTIN LARSON,
From Plover, Ia.
To Box 32, Callender, Ia.

EMANUEL NEWMAN,
From Lancaster, N. Y.
To Retired, care Dept. Surgeon's Office, Ft. Santiago, Manila, P. I.

E. POLONSKY,
From 1061 Broadway, Buffalo, N. Y.
To 163 Broadway, Buffalo, N. Y.

O. A. BREHLER,
From P. O. Box 375 Sanger, Cal.
To P. O. Box 128 Sanger Cal.

HOWARD GOODWIN,
From 221 Columbus, Ave., Boston, Mass.
To 291 Columbus Ave., Boston, Mass.

JENNIE H. SUMNER,
From 1872 Center St., Roxbury, Mass
To 1858 Center St., Roxbury, Mass.

OTTO E. ROSS,
From Conde, S. D. care Goldthrop Drug Co.
To Conde, S. D.

TITRATION OF HYDROFERRICYANIC ACID.

When ferri- and cyan-ion are present, potassium iodide and zinc sulphate are added to the slightly acid solution. The separated iodine is titrated with thiosulphate and starch as an indicator. The influence of ferri-ion is prevented by adding a little KFl solution. Cyan ion being present, some drops of sulphuric acid are added, and the prussic acid is expelled by means of a stream of carbonic acid at 50°. If the gas (CO_2 + HCN) is brought into a silver nitrate solution, the quantity of HCN can also be determined.—E. Müller and F. Seidel (*Zscht. Anal. Chem.*, 1914).

HENRY HURD RUSBY, M. D.

Fifty-seventh President of the American Pharmaceutical Association.
Dean, College of Pharmacy of the City of New York.
Member of the Revision Committee of the United States Pharmacopœia.
Pharmacognosist of the United States Department Agriculture of the Port of New York.
Chairman of the Scientific Directors of the New York Botanical Garden.



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Section on Pharmacopoeias and Formularies

Papers Presented at the Sixty-Second Annual Convention

MINUTES OF SECTION

The first session was called to order promptly at 9:30 a. m. on Wednesday, August 26, at the Hotel Pontchartrain by Chairman Cook, who in opening the meeting referred to the unavoidable absence of the Secretary, Prof. Needham, on account of sickness in his family, and stated that he had requested Mr. Thum of Philadelphia to act as Secretary *pro tempore*.

The Chairman then delivered his address [printed in September, 1914, issue] and on motion of Prof. Remington it was referred for publication.

The Secretary's report was read and, on motion, it was accepted and placed on file.

Chairman Cook then read the following letter from Dr. Nestor Tirard, the Medical Editor of the British Pharmacopœia:—

74 Harley Street, W., London, England, August 8th, 1914.

E. Fullerton Cook, Esq., Chairman Section on Pharmacopoeias and Formularies, American Pharmaceutical Association.

Dear Sir: In answer to your letter of July 7th, relating to the British Pharmacopœia, as it was not in my power to send you an advance copy I had hoped to forward you a brief review of the new issue. Now I have to inform you with regret that owing to the grave inconvenience which might result from the introduction of a new standard at the present time, it has been decided to postpone publication. Very truly yours,

Nestor Tirard,
Medical Editor of the B. P.

Prof. Remington then addressed the Section upon the subject of the Pharmacopœia IX, saying:—

"Mr. Chairman, I do not think it is necessary to present a report at this time in detail of the Pharmacopœia. It is very remarkable that the British Pharmacopœia revision, which has

been coincident to that of our own Pharmacopœia, should have progressed up to the present time.

"I was in London a year ago and Dr. Tirard invited me to meet him—who might be called the Chairman of the Committee on the revision of the British Pharmacopœia. He called me in to see the new British Pharmacopœia. The new features in it are very few. It seems so strange when I think of a year ago and being with Dr. Tirard. I looked at the modest office. It was something like our own pharmacopœia. One had to stop and think a few moments and make a few comparisons.

"I will tell you what has been done, and I think it is of far more importance than it apparently seems. The British Pharmacopœia and the United States Pharmacopœia get together on one practical idea which affects the doctor and the pharmacist equally, and that is to have a table of abbreviations for everything. Abbreviations! Now what do we mean by that? I think you all must realize that in the reading of prescriptions we do not know sometimes, as we read a prescription, what the doctor means. Abbreviations are the real language of prescriptions. No doctor in the world ever writes out now in full a prescription either in Latin or in any other language, particularly in Latin, with all the terminations, correctly. They say life is too short to do that. Every doctor abbreviates. Then why not have a standard and let 'pot. iod.' stand for potassium iodide, and 'sod. brom.' stand for sodium bromide. Now we want to make uniform throughout the English speaking countries this system of abbreviations. In other words, prescription language we want to get together on, and have uniform. It is going to take time. An English pharmacist reading a prescription of an American physician when travelling, will know just exactly what he means and the abbreviation can mean nothing else when it is once established. Nothing of this kind has ever been done before making uniform these abbreviations. The idea, as I developed it to Dr. Tirard, took some little time. He said, 'That is one of the most desirable things we can have.' Then I called his attention to the fact that we can also use these abbreviations for shop furniture. Take, for instance, the question of the relief-clerk: a relief-clerk going to another store is confronted with different abbreviations. Potass bromid.—that is very easy,—potassium bromide, and so on. There is no uniformity now. The manufacturers of labels have their own abbreviations. Each manufacturer of these glass labels has his own idea of how these things should be abbreviated. It is a little practical matter that has not been systemized and brought into line. Here is a little thing that science is getting into, the little matter of abbreviation of the words that are going to be used. We are going to have an abbreviation for any item a physician prescribes, if the doctors still continue to write prescriptions, although I am sometimes doubtful if they will. But never mind; the drug business will survive nevertheless, but we do want to see when we go into stores, a uniformity in the language that is used in designating any articles which are used in medicine.

"I will now come back to the actual work of the pharmacopœia. A very important part of the book which is usually neglected by the pharmacist and the physician. The tables,—you are familiar with them, no doubt.—in the back part of the book, the part called the appendix. This appendix is really the most important part of the book because that is the standard for standardizing the standards; volumetric solutions, tests, and the tables,—everything which is there is really the most important part of the book, because they are the standards which regulate the standards. The front part of the book and the text part of the book are the only parts you are interested in. It has what you want, paregoric, and syrup of squill and other good things you want. But in order to start the work, that it may go on systematically, the committee must have the standards upon which they base their work before them all the time, so we begin at the end of the book; that is, we begin with the appendix and get at all the mistakes that are in that appendix, and then when that is done, the completed appendix, upon which the rest of the book depends, is in the hands of everybody. That part of the book is in the hands of the printer, and I hope in two weeks we will be able to send that out, so it will form the basis for the work.

"We have heard a good deal about the binding of the book. One man has written a letter with regard to binding the book, in which he says the book is all falling to pieces. Well, I asked him how long he had had it. He said he had had it twelve years. I said, 'What use did you put it to?' He said, 'Oh, my pharmacopœia is in use all the time. I have it on my prescription counter.' I said, 'Has it been dusted with permanganate and nitric acid once in a while? Didn't the boys drop it on the floor twice a day on an average?' He said it was a good deal that way. A Pharmacopœia twelve years in use, with that kind of treatment, and yet it is beginning to fall to pieces. I said, 'You would begin to fall to pieces too if you had been knocked about that way for twelve years.'

We are going to tie it together with four bands. These bands are glued on with glue which has passed inspection and is free from germs and absolutely aseptic. It is to come in around each one of those and to be glued down that on the side (illustrating). The committee hope, if the book is thrown on the floor, on one corner, that the other three bands will hold; that if it don't hold on that corner, then the other three bands will hold it together.

"This idea about the pharmacopœia not being well bound! Why, the book is one of the best bound that has ever been put forth. This criticism is only from people that are hypercritical. I can show you plenty of books that do not get half the use that the pharmacopœia does that have all gone to pieces.

"But I will tell you one thing about the binding that is of concern to you; the worst kind of binding now for anybody to buy for any kind of book is sheep. Sheep binding will not stand because we do not get the leather we used to. The process that is used for tanning will cause it to weaken sometimes inside of a year; at least it becomes tender.

"Now look at this book; solid and unyielding. Where does the strain come? Just on that little bit of a crack, hardly a line in length. The whole thing depends upon that little hinge. I sincerely hope and believe, if we do not have a war, that our pharmacopœia will be out after all within a reasonable time. I think in six months we can see it through the press and get it out. But here! There is the dummy; there is the book only for size; don't look inside because it is all mixed up purposely, but there is the style of binding that I hope you will buy for your own good. It is not made of leather; it is called buckram; that is a cloth especially made, far more durable than sheep and at half the price. This will be on account of the binding, intermediate in price; between the sheep and the cloth. I will pass that around and let you look at it. That is the dummy; it has been adopted merely to show the size of the book and the printing on the outside, and the binding, but I think that binding will outlast two sheep copies anyhow, and, of course, there is the cloth copy (indicating); the printing will be different; the outside will be different. It has been approved by the Board of Trustees and that will be the outward appearance of the new book. This printing will probably be different, so as readily to distinguish one from the other. That will be the color of the buckram, and this will be the color of the cloth. The blue will be the cheaper of the two, and we will have the sheep for those who want it. Now the committee has tried, and it is going to keep on trying to satisfy everyone and every suggestion that has been made on the pharmacopœia we would like to consider, but that is not always possible.

"Now there are two other things,—there may be three; one is the whiskey question, whether it is to be taken up by the pharmacopœia or whether it is not, and I cannot tell you yet what the decision will be. But the decision is growing among a great number of the members of the Association to drop whiskey and brandy from the pharmacopœia entirely and not involve the pharmacopœia in any litigation in the future; drop it entirely. And I think Dr. Wiley is probably quite willing to do that. He has been the great champion of pure foods and pure drugs, but for my own part, I do not hesitate to tell every body what my own opinion is as Chairman of the Revision Committee; I think it was a mistake to put whiskey and brandy into the pharmacopœia Eighth Revision.

"I do feel very greatly relieved, and we must all feel relieved at the prospect of getting out that book. And the people who have been crying about the pharmacopœia all this time do not realize that they will not be the happiest bunch when that book comes out, but the happiest bunch will be the members of the committee and the poor chairman who has been the punching-bag for everybody, but who can then lie down and get a good sleep and get up and eat a good breakfast.

"I haven't anything to say with regard to the book itself because it will be so soon in your own hands that you can see for yourselves. I am only bringing to you here a part of the make-up of the pharmacopœia and to tell you the condition of the revision at the present time.

"The only other question is which of the two organic assays which have been proposed will be accepted, and as to that matter, I am going to have a meeting with Dr. Rosengarten, who is the Chairman of the committee of chemicals and organic chemicals. I met Professor LaWall who was to have been here, but Mrs. LaWall met with an accident and broke her arm and he is compelled to remain in Philadelphia with his wife. We have Mr. Raubenheimer and Dr. Lyons, who is with us at this meeting—God bless him—is one of the committee. Now he was very ill, and he is the man that has given us those tables. He is the mathematician of this committee. I believe Dr. Lyons lives, eats and drinks figures, and I could not be surprised when he gets up in the morning some of these hot days if there is not an imprint of the pharmacopœia on his pillow. But never mind all this; I want to thank him and every other member of the committee. The bow is unstrung and we are so nearly through that I can indulge for the first time in the last five years in some happy thoughts.

"There are other members of the committee here who want to say something, and I am taking the time, but I do hope sincerely that we will have no such set-back as that of the British Pharmacopœia. I hope you who are gathered here to hear about the pharmacopœia will share the attitude and the feelings of the Revision Committee.

"There have been some differences in some of the committees. The members differed and squabbled and fought and lost their temper once in a while. But I know them all. When anybody says anything nasty about anybody else, it goes in the waste-basket, because I won't print anything that is derogatory, or which reflects upon any member of the committee. Some things have not been published, but you can easily see if the doors are open to let in personal feeling and personal views it would not be a valuable book. It is not gotten up to express anybody's personal view, but if in the course of time the members have any difficulty, we have got to straighten it out. We must have harmony and coöperation or we could not get along. We have had it and we are nearly through, and I do not think there is any liability of any very big trouble. We have been very strenuous about expressing our opinions, but after all, I think we will have a pharmacopœia that will meet with the approval of nearly everybody." (Applause.)

CHAIRMAN COOK:—"I am sure we have been very much enlightened by this informal and interesting report of the Chairman of the Revision Committee. It will now be in order to hear any discussion on this question of pharmacopœia. All questions that anyone wishes to ask, no doubt the Chairman of the Committee will be glad to answer or explain any point."

PRESIDENT BERINGER:—"I do not think the druggists or many of the critics have any idea at all of the volume of work that has been necessary in making up the standards that go to make up the pharmacopœia. I find difficulty in reading them all, and I guess most of the members do."

MR. THURSTON:—"I would like to ask Prof. Remington a question. In the old pharmacopœia we had a number that was pasted in,—an official number for each copy. I would like to know if some method could not be devised to publish an official certificate in each copy so that it would be taken as authority in cases at law. I have had cases where they would question the pharmacopœia. For instance, they would say, 'How do you know that is the Pharmacopœia of the United States?' Well, I wasn't on the committee to prepare the pharmacopœia; I didn't help write it, and there was no way for me to swear that that was absolutely the Pharmacopœia of the United States. There should be some method, if possible, so that in cases of that nature that we could prove that the book that we testified to was the Pharmacopœia of the United States."

PROF. REMINGTON:—"I certainly appreciate the remark by my friend Prof. Thurston, and this is what he refers to, I think; this is the old pharmacopœia,—that little label there; that coupon we call it; that little coupon there on that page. Now, that was never gotten up with the idea of proving the identity of the pharmacopœia, but that idea originated with Dr. Charles Rice in the previous pharmacopœia, of pasting a coupon in the book which simply read 'The Pharmacopœia of the United States of America; official copy,' and then it is numbered serially, and they are all taken up in issues. For instance, there is 'A,' meaning 20,000 copies of the pharmacopœia, ordered first; Series B, meaning the next 10,000, or Series C, the next 10,000, or 5,000, as the demand tapered off. There was one published, and I will say that the same publisher will publish the new pharmacopœia that published the last. These coupons are used between the printer and the publisher so that the coupons here were furnished at the last revision and now they will be furnished by a Board of Trustees. The Secretary, Mr. Whelpley, will furnish the coupons for this edition, and he has charge of those. He issues 20,000; he sends to the publishers 20,000 and they send 20,000 to the printer to paste in the book at the time that issue goes out, and they are all numbered from one to 20,000. Now when Series B comes, then it will be the second issue.

"As to the point of Prof. Thurston, I do not see how the use of a label or the use of anything in the book itself would be regarded as evidence that it really was the pharmacopœia, if a man wanted to cheat,—if he wanted to get up something to imitate the pharmacopœia, or leave something out, or put something in, and the lawyer wants to know if that is really the pharmacopœia."

MR. HOSTMANN:—"That question was raised in New Jersey some years ago in a suit in one of the lower courts. The lawyer wanted evidence that that was a copy of the pharmacopœia. The Judge was about ready to throw the case out. Then there was an agreement made between the two attorneys, and the court decided that the only way that that book could be admitted as evidence was to secure an attested copy from the Library in Washington,—I believe it is the Library,—the Congressional Library of the United States, and the State's attorney went to Washington, and there they produced a copy of the pharmacopœia and it was endorsed on the inside on the second page 'Registered in the office of the Librarian of Congress at Washington.' There was an official seal there and the Librarian's signature that that was a true copy of the United States Pharmacopœia. That was only in the lower courts there, but I believe that is the regular procedure if you want to use the book as testimony you will have to have it attested by the Librarian at Washington, that it is a true copy of the book. I imagine that is the only way it can be done."

MR. RAUBENHEIMER:—"I can see it will be an immense benefit and it will certainly increase the weight of the pharmacopœia in court if the statement was made on the title page that this book has been made the legal standard of the United States. I think such a statement would certainly have some weight in court; not only in court, but it will have weight in the other service. I believe there are still some men scattered throughout the country, perhaps in New York, perhaps in this city, that don't know the U. S. P. and the N. F. has been made the legal standard. I believe that would be a pretty good idea. It might also increase the weight by having perhaps the stars and stripes or an American eagle or something like that on the outside. It would impress probably the public as well as the pharmacists, and even the lawyers."

The report of the Committee on the U. S. P. was read by Prof. L. D. Havenhill. [Printed in September issue.]

CHAIRMAN COOK:—"I would suggest that as the Pharmacopœial Revision Committee are going to have a meeting this afternoon, that a motion be made for the receiving of this paper and that it be referred to that committee for consideration." It was so ordered.

PROF. REMINGTON:—"I just want to say a word. There was a point brought up by Mr. Havenhill about expensive apparatus. The committee have considered the matter very carefully. For instance, on electrolytic methods, which cannot be performed by the pharmacist;

the committee realizes that this book now is the standard for the United States; it is the standard under the food and drugs act, and anything like dropping from the pharmacopœia a decisive and valuable test like the electrolytic test, and give it up because the clerks in the drug stores cannot get the apparatus, or because the students in the colleges cannot use it, is not to be considered. We cannot afford, with a book that is authority for the United States, to consider that all we have got to think about is the student. The pharmacopœia was not made and is not made for the student. It is not its function either to cater to the retail druggist. It is, though, the prime object that the test shall be as simple as possible; and the pharmacopœia cannot be limited in scope, now that it is the standard for the United States, to the non-education of some clerk in a drug store.

CHAIRMAN COOK:—"The next order of business is the report by Prof. C. Lewis Diehl, of the National Formulary Committee."

REPORT OF THE COMMITTEE ON NATIONAL FORMULARY.

C. LEWIS DIEHL, CHAIRMAN.

The efforts of the National Formulary Committee throughout the year have been chiefly directed toward the perfection of the final text. This has been reproduced as edited copy in the Committee Bulletins, and has included the majority of articles proposed for Part II, which have been prepared by the Committee on Unofficial Standards.

A set of formulas and articles proposed for the book have also been prepared in manuscript form so that Part I (formulas) and most of Part II (drugs or chemicals) are practically in readiness to turn over to the printer when the contract is awarded.

A conference of the Committee has been called, to extend over possibly two days, following this meeting of the Association, and it is expected that the final manuscript will be perfected at that time.

As bids have already been received by the Committee on Publication for the printing and binding of the book and the contract will no doubt be awarded by the Council before the close of this meeting, it can be confidently expected that the National Formulary, Fourth Edition, will make its appearance within the next six months and certainly not later than the appearance of the U. S. P.

On motion it was referred for publication.

CHAIRMAN COOK:—"The next report is one by Mr. George M. Beringer, Chairman of the Committee on Unofficial Standards. [Printed in November issue]. You have heard this report. If there is no objection it will take the usual course."

MR. HYNSON:—"May I ask if you, in including all this work in the National Formulary, regard it as the proper place for it?"

MR. BERINGER:—"It seems to me in answer to that inquiry, Mr. Hynson, that it is absolutely necessary to protect the National Formulary as a legal standard; that it should include proper tests and define its standards and its formulas. We have always believed they were there, but they are not there. It is up to us to supply them. We have discussed it back and forth in the committee and we have all come to see the necessity of its being there.

"The Food and Drugs Act says The National Formulary. You cannot amend the food and drugs act of the nation and the food and drugs act of the various states by simply changing the name; you must retain the title of your book."

MR. HYNSON:—"I meant as a supplemental title."

MR. BERINGER:—"The main title of the National Formulary must remain."

MR. RAUBENHEIMER:—"In a way I believe Dr. Hynson is right. A National Formulary, as such, must retain the present title inasmuch as the pure food and drugs law simply states the standard in the U. S. P. and the N. F., and so on. In time, I have no doubt, this committee on standards will standardize all things."

MR. HYNSON:—"The idea is brought out by Mr. Raubenheimer. I would like to say, after a great deal of thought and consideration—I have to think over things very hard and very long to get a good understanding of them—that I don't know any work that the American Pharmaceutical Association has done that is so creditable and is so much in use, and that

there is so much promise in it as there is in this work. I believe it is the beginning of the most stupendous work of the American Pharmacist. Everything changes and I think the day will come when we will see a book of standards which will be the outgrowth of this work and will far exceed in importance the United States Pharmacopœia. I want to say, however, that that belief is simply a personal belief, but I do believe it will not be two decades before the physicians of this country will entirely ignore the United States Pharmacopœia.

"I want to say a word in appreciation of this work; that I believe it is of such a character and a work that has required so much care and attention that it ought to be brought out distinctly; let it be known that the National Formulary, beside being a book of formulas is a book of standards. I do not believe that that can be done well except by making a supplemental title, if that be legal. But I want to set forth my appreciation of the work and my belief that we hardly know what has been begun in this direction."

MR. BERINGER:—"I would like to call the attention of the Association to the fact that a great deal of the work which the Committee has actually done has been up-hill work. Much of the work the committee did became valuable to the Pharmacopœia and I believe it is indeed a very happy condition that we have had such coöperation on the part of the different committees."

MR. KIRCHGESSNER:—"Do I understand, Mr. Hynson, that we are to have a supplemental book before it goes into the National Formulary?"

MR. HYNSON:—"No, I did not mean that, because we have to retain the legal character of it, but I would like to see it, as far as possible, brought out that there are things in the book that are not standard and a great many that are standard."

Mr. Hynson, Chairman of the Recipe Committee, read the report of that Committee. [Printed in September.]

MR. ENGLEHARDT:—"I move that this very excellent report be received and the recommendations contained therein be referred to the Chairman."

Motion seconded and carried.

CHAIRMAN COOK:—"It will be received and the recommendations referred to the Council for action.

"We have about ten minutes at this point for discussion of this paper. It is an excellent report and an ideal condition that we hope will develop."

MR. RAUBENHEIMER:—"There is no doubt in my mind that Chairman Hynson has given this subject much more thought than perhaps any of us. I hope he will remain the Chairman of that committee, because he understands it much better than I do. In time, he will convince all of us that he has the proper idea of what the ideal recipe book should be, and no doubt it will be of great benefit if such a book is published only in part, as a supplement to the journal. We have too many books of formulas, but we have no reliable ones. It is necessary and it is the duty of the A. Ph. A. to take the initiative step to bring about such a book of which Prof. Hynson is the father."

MR. BLAKESLEE:—"I just want to say a word on this subject, a fact that Mr. Hynson or perhaps others have not considered. I observe in every section of the country the attitude of the retail druggist in regard to their desire for information such as Prof. Hynson proposes, and it is alarming to see what a demand there is for reliable formulas; how at sea the retail druggists are for information of that kind. There is a class of formulas that could be recommended by intelligent pharmacists, such as Mr. Raubenheimer and Mr. Hynson, and others; therefore it would be a clearing-house for certain large manufacturers. I am sure it would be a source of great value to them if some such publication of that kind were brought out, and I hope Mr. Hynson will never let up until he gets his idea in some sort of tangible form."

A paper by Dr. Bernard Fantus entitled, "Can the U. S. P. and N. F. be Made Popular With Physicians?" was read and referred for publication. [Printed in this issue.] Adjourned until Friday, August 28.

SECOND SESSION, FRIDAY, AUGUST 28, 1914.

The meeting was called to order by Chairman Cook at 9:30 a. m.

PROF. RAUBENHEIMER:—I move that the reading of the minutes be dispensed with.

Motion seconded and carried.

CHAIRMAN COOK:—The first subject on the program is a review of the Norwegian Pharmacopœia, by Dr. M. I. Wilbert.

THE NORWEGIAN PHARMACOPŒIA.

M. I. WILBERT, PH. M.

The fourth edition of the Norwegian Pharmacopœia, or as it is officially known "Pharmacopœa Norvegica, 1913," became official on January 1, 1914, replacing the former third edition of the book which was published in 1895.

The new pharmacopœia consists of a total of XIII and 467 printed octavo pages, 362 of which are given over to the description of official drugs and preparations. The official monographs include 543 titles, of which number 17 are general headings, 149 are drugs, including 15 of animal origin, 169 are chemical substances and 208 pharmaceutical preparations.

The prefatory pages include the royal proclamation of February 7, 1913, announcing the publication of the book and the date on which it is to become official, a review of the contents, a short prefatory note by the members of the commission in charge of the revision and the outline of general methods for determining physical and chemical constants. These general methods include directions for the determination of temperature, specific gravity, solubility, melting point, boiling point, polarization, iodine number, acid number, ester number and other constants. This portion of the book also briefly outlines the methods to be followed in collecting and preserving plant drugs.

The text of the pharmacopœia is printed in Norwegian and only the titles of the several articles are in Latin. In compliance with an existing agreement these Latin titles are similar to those in the other Scandinavian countries, Sweden and Denmark, and are generally quite distinct from the titles appearing in the pharmacopœias of other European countries; the older Berzelian method of giving preference to the acid radical in connection with chemical substances being generally followed.

The monographs for drugs, particularly drugs of vegetable origin, are concise and clear and the same can be said of the monographs for chemical substances. In connection with the latter class of articles the chemical formula and also the atomic weight where reasonably available is usually given. This is modified somewhat in the case of acids and other solutions to indicate that those substances are more or less variable. Hydrochloric acid, for instance, is given HCl.Aq. with the requirement; 100 parts contain 25 parts of hydrogen chloride (HCl=36.47).

In common with the pharmacopœias of the two other Scandinavian countries this book includes what may be characterized as a pharmacopœial joke. Under the heading "Glacies" and the Scandinavian "Is," the equivalent of the English "Ice," is a blank space evidently intimating that any attempt to describe the substance would be useless.

As an illustration of the recognition that has been accorded to newer researches, more particularly the possible influence of enzymes on the activity of plant drugs, it will suffice to call attention to the requirements for digitalis leaf. This drug is to be collected from the indigenous, wild growing plant at the time of flowering, is to be dried for at least five hours at about 80° and preserved in small, well-closed containers holding about 50 gms. of the drug.

The Norwegian Pharmacopœia has, of course, been liberally discussed in European countries and differences of opinion have been evidenced particularly in regard to the scientific character of the book. A writer in the Chemist and Druggist, London, for instance, expresses the opinion that "The book is not a particularly up to date publication," while the reviewer in the Lancet opines that "The new work embodies many features of modern research in pharmacy and testifies to the high scientific attainment of Norwegian pharmacists." The German reviewers generally find much to commend in the book, largely perhaps, because it is considered to be distinctly in keeping with the German pharmacopœia. The descriptions of crude drugs and of chemicals are generally commended, and Schimmel & Co., in their Semi-Annual Report for October, 1913, express the opinion that the requirements included in the monographs for essential oils are generally reasonable and in keeping with our present-day knowledge regarding this class of products.

The galenical pharmacy is perhaps not as thoroughly up to date as one might have expected, a considerable number of complex pharmaceuticals have been retained from former editions of the pharmacopœia and several equally objectionable preparations were included as new remedies. Among the latter is the compound syrup of hypophosphites, a complex preparation that has been the cause of considerable dispute in our own country.

General articles descriptive of the several classes of galenicals have been included and these usually describe the methods to be employed in making and preserving the various preparations. In connection with fluid extracts and tinctures, the color, specific gravity and extract content of the several preparations is given.

A liberal number of assay requirements have been introduced in connection with the preparations of alkaloidal drugs, but the requirements are not stated at all uniformity and in connection therewith some rather liberal variations are permitted. Thus extract of nux vomica may vary from 15 to 17 *per cent.* of total alkaloids and extract of opium from 18 to 20 *per cent.* of morphine. The tincture of nux vomica may vary from 0.25 to 0.30 *per cent.* of total alkaloids but the tincture of opium is to contain *about* 1 *per cent.* of morphine and fluid extract of hydrastis is to contain *not less than* 2 *per cent.* of hydrastine.

Among the newer remedies that have been added we find acetylsalicylic acid, diethylbarbituric acid, camphoric acid, bromoform, ethylbromide, creosote carbonate, eucalyptol, eugenol, hexamethylentetramine, cresol, novocaine, amyl nitrite, silver proteinate, antipyrine salicylate, mercury salicylate, solution of formaldehyde, and the several hypophosphites used in the making of compound syrup of hypophosphites. It will be noted that at least several of these articles are no longer considered new remedies with us in this country, while others have never secured sufficient recognition on the part of the medical profession to warrant their being included in our own pharmacopœia.

The requirements of the Brussels Conference Protocol have been generally followed rather closely. The protocol itself is reproduced in tabulated form and the articles that have been included in the pharmacopœia itself are designated by the addition of the letters P. I. to the sub-titles which are those included in the international treaty.

Table showing the international standard titles included in the Norwegian Pharmacopœia, 1913:—

Acidum Hydrocyanicum dilutum P. I.
Amygdalæ amaræ aqua s. Aqua amygdalæ amaræ P. I.
Belladonnæ extractum s. Extractum Belladonnæ P. I.
Belladonnæ folium s. Folium Belladonnæ P. I.
Cocainum hydrochloricum P. I.
Colchici semen s. Semen Colchici P. I.
Colchici tinctura s. Tinctura Colchici P. I.
Digitalis folium s. Folium Digitalis P. I.
Digitalis tinctura s. Tinctura Digitalis P. I.
Ferri jodidi sirupus s. Sirupus jodeti ferrosi s. Sirupus ferri jodati P. I.
Hydrargyri unguentum s. Unguentum Hydrargyri P. I.
Hyoscyami extractum s. Extractum Hyoscyami P. I.
Hyoscyami folium s. Folium Hyoscyami P. I.
Ipecacuanhæ radis s. Radix Ipecacuanhæ P. I.
Jodi tinctura s. Tinctura Jodi P. I.
Kalii arsenicosi liquor s. Arsenicalis liquor Fowleri s. Liquor arsenicalis Fowleri.
Opii et Ipecacuanhæ pulvis compositus s. Pulvis Doveri P. I.
Opii extractum s. Extractum Opii P. I.
Opii Tinctura s. Tinctura Opii P. I.
Phenoli solutio s. Aqua phenolata P. I.
Secalis cornuti extractum s. Extractum Secalis cornuti; Ergoti extractum s. Extractum Ergoti P. I.
Secalis cornuti extractum fluidum s. Extractum fluidum Secalis cornuti; Ergoti extractum fluidum s. Extractum fluidum Ergoti P. I.
Secale Cornutum s. Ergotum Secale P. I.
Strophanthi tinctura s. Tinctura Strophanthi P. I.
Strychni extractum s. Extractum Strychni; Nucis vomicæ extractum s. Extractum Nucis vomicæ P. I.
Strychni semen s. Semen Strychni s. Nux vomica P. I.
Strychni tinctura s. tinctura Strychni s. Nucix vomicæ tinctura s. tinctura Nucis vomicæ P. I.

The appendix includes a number of tables, among others: An atomic weight table of the elements referred to in the pharmacopœia based on the international atomic weight table for 1910; a list of the reagents used in testing drugs and medicines, also a list of reagents for tests and stains used in the clinical laboratory; a table showing the specific gravity of solutions of acids and alkalies at 15°, a table showing the number of drops in a gramme of several frequently used official preparations when dropped from the official normal drop counter at 15°, a table of the maximum doses of active medicaments, a list of poisonous articles that should be kept in the poison closet apart from other medicines, and a list of potent medicines specially designated in the body of the book that are to be kept separated from other articles; a list of the articles added to the fourth edition of the pharmacopœia and a list of the articles in the third edition, but not continued in the fourth edition. These several tables are followed by a reprint of the Brussels Conference Protocol and by two indices, one an index of the Latin titles with the sub-titles from the International Protocol and the other an index of the Norwegian names. The index of the Latin titles also includes under the several official names of the drugs and chemicals a list of the preparations in which the substances are directed to be used.

Altogether the book impresses one as being an earnest attempt to solve pharmacopœial problems in an up-to-date manner. The directions and requirements appear to be reasonable, and the general concensus of opinion of writers and reviewers is to the effect that the book furnishes satisfactory standards for the articles enumerated in it.

In the limited time that can be devoted to a review of this kind no elaborate critical review of the book can be presented, but enough has been said to justify the statement made by the reviewer in the London Lancet that the work embodies many features of modern research in pharmacy and testifies to the high scientific attainment of Norwegian pharmacists.

DISCUSSION.

MR. RAUBENHEIMER:—"It is certainly gratifying to become acquainted with some of these foreign pharmacopœias, even if we are unable to read them. I would like to ask Mr. Wilbert what edition this pharmacopœia is, in the first place, because that is quite important. I also want to point out that the nomenclature of the Scandinavian pharmacopœia is also used by the Netherlands pharmacopœia. Of course, this nomenclature is entirely different and confusing with the tables of the U. S. P., and you will have to get used to it in filling foreign prescriptions.

"There is one important item I also want to call attention to. I had a call for this from one of the professors in Highland College. It was a Norwegian prescription and it was rather a peculiar preparation. I looked it up for him and it happened to be spiritus ammonii carbonici pyro-oleosi. That was the old spirit of hartshorn. Instead of being distilled from the horns of deer, as done by our forefathers, and which process, I suppose, was official, it is now made by taking ammonium carbonate, and in order to give it this pungent, disagreeable, empyreumatic odor, adding a small amount of ethereal animal oil, the ill-smelling empyreumatic oil distilled from bones, etc., discovered by the Berlin alchemist Dippel. That makes practically the same thing as the old spirit of hartshorn, which is still used in medicine to-day in some countries.

"Regarding the nomenclature, I have no doubt Mr. Wilbert has in his paper the odd titles ætheroleum and pyroleum. The former applied to 'essential oils,' and the latter to 'empyreumatic oils,' and they are very wisely intended to separate these oils into classes by themselves.

"From the review of foreign pharmacopœias the pharmacist can always learn something, and even the members of the Revision Committee of the U. S. P. can receive and conceive valuable suggestions, which may be applied to our own pharmacopœia."

Dr. Wulling stated the matter referred to by Mr. Raubenheimer was one of the subjects the International Pharmaceutical Congress has before it and he thought a proper solution of the subject could be brought about in time.

President Beringer stated he believed the American Pharmaceutical Association had a committee that was giving attention to this matter. The question of titles was one that was prevalent, but there was, nevertheless a practical side of that question. He stated that every pharmacopœia has been made to suit the medical practice and customs of its own country. Now, to change the title under which mixed drugs are to be prescribed in a country, is likely to cause confusion, and he believed the U. S. P. has as pure a system of nomenclature as any of the foreign pharmacopœias; that on the whole he believed our titles to be as pure in following a distinct system of nomenclature as any of the pharmacopœias, and to change the title would really be of no benefit but only lead to confusion.

Chairman Cook stated it was interesting to say, in connection with the subject of international agreements, that the present pharmacopœia revision committee has coöperated with the British Pharmacopœial Committee on uniform abbreviations, and that with very few exceptions abbreviations will be uniform in Great Britain and in the United States.

Dr. Wilbert, in answer to a question propounded by Mr. Raubenheimer, stated the present Norwegian pharmacopœia is the fourth revision, published in 1914. The Scandinavian system of nomenclature, which is the earliest, is adopted also in good part at least in the Belgium pharmacopœia, and as Mr. Raubenheimer said, it occurs also in the Dutch. The matter of foreign titles, he thought, was an important one. Personally, he thought it would have been an advantage as an educational factor to include in our own pharmacopœia the synonyms of the most widely used titles.

President Beringer read a paper entitled, "The Review of the New Homeopathic Pharmacopœia." [Printed in February issue.]

CHAIRMAN COOK:—"If there is no objection, I am going to ask that the exhibition of crude drugs be presented next, and following that, the exhibition of preparations. The crude drugs are supplied from the University of Minnesota, and Prof. Newcomb not being able to remain, we will listen to a statement with regard to them by Prof. Wulling."

PROF. F. J. WULLING:—"Mr. Chairman and Gentlemen: The exhibit before you consists of drug specimens grown and produced in the Medicinal Plant Garden and the Medicinal Plant Laboratory of the College of Pharmacy of the University of Minnesota. The time is limited and instead of giving you a formal address on the subject of medicinal plant cultivation, I will speak only a few minutes on the subject.

"The crude drugs exhibited before you are the bases of many of the preparations which will be the subject of discussion immediately following. The exhibit before you is not as creditable a one as we could have prepared had time permitted. The more important of the drugs included in the exhibit are as follows:

Digitalis, U. S. P.
Digitalis lutea
Digitalis ferruginea
Digitalis lanata
Digitalis grandiflora
Datura Stramonium
Datura tatula
Datura Stramonium, stems, powdered
Datura tatula, stems, powdered
Datura metelloides
Datura metelloides, stems, powd.
Datura fastuosa, cœrulea
Datura metelloides, seed, whole
Datura Stramonium, seed, whole
Datura lævis, seed, whole
Datura fastuosa, alba
Valeriana, U. S. P.
Salvia, U. S. P.
Marrubium, U. S. P.
Chenopodium
Levisticum
Belladonnæ Folia
Symphytum Leaves (Adulterant of Digitalis)
Verbascum Leaves (Adulterant of Digitalis)
Althæa Leaves
Taraxacum, U. S. P.
Coix Lacryma, fruits
Humulus, U. S. P.
Cannabis sativa
Capsicum
Inula, root
Coriandrum, U. S. P.
Conium, U. S. P.

"It occurs to me that the exhibit explains itself in a way and that it might be more interesting to you to learn something of the introduction of this kind of educational work into the curriculum of a pharmaceutical educational institution. Those of you who are sufficiently interested to desire information about the drugs exhibited are asked to read the labels on the respective containers. Much information will be found there.

"I have been asked here, whether I think it is proper for a college of pharmacy to undertake the production of crude drugs. I reply that it is perfectly consistent, indeed, I believe essential, for the best and fullest kind of pharmaceutical instruction for colleges of pharmacy to add medicinal plant gardens to their equipment to strengthen the curriculum. We are very careful to emphasize that we do not cultivate medicinal plants in a commercial way, but we do stimulate especially the coming pharmacists to endeavor to prepare for themselves some of the crude drugs which it has been found upon research and experiment to be possible for them to cultivate satisfactorily.

"Our present medicinal plant garden occupies an area of a little over two acres and was begun about five years ago. Our first garden was begun in 1893, but on account of lack of time and money we did not go on with it. A few years later I used a good part of the plot of ground adjoining my residence in the rear, for drug plant cultivation but this did not prove satisfactory. Somewhat later, the University authorities became more disposed to consider a plant-garden and finally were prevailed upon to allow a sum of money for a garden and to designate a site. Indeed, so interested did the authorities become in the project that they insisted that I visit the more important botanical and medicinal plant-gardens of Europe and this country. I gathered much information from the gardens at Paris, Berlin, Marburg, Munich, London and elsewhere. Much of the information thus gained has been used in a practical way at our College. Dr. E. L. Newcomb, who had had some experience in horticulture and greenhouse work, was secured to carry on the work in pharmacognosy and to carry out the plans for the garden. His services have been very helpful along these lines.

"In order to employ the fullest facilities of the garden, a medicinal plant greenhouse and laboratory was erected immediately adjoining the Pharmacy Building and connected with it by a passageway. This laboratory is unique and is the only one of the kind I know of. It is 32 x 61 feet in dimensions, has a full cemented basement, in which are contained a complete milling-plant, consisting of fanning-mills, disintegrators, limited powdering-mill, thresher and sifters, all operated by individual electric motors. Five spacious drug-drying ovens are used in this basement, together with a series of portable steel drug containers. A separate drying room and a root-cellar adjoin the main basement room. The superstructure is the greenhouse proper, the central portion of which is devoted to a pyramid on which are placed the perennial and some potted annual plants. The lantern is high enough to admit of the cultivation of trees, such as a small sized eucalyptus, tall shrubs, etc. Surrounding this pyramid are cement work-tables for sixty students. An aquarium is also provided. The department of pharmacognosy is located in the Pharmacy Building on the side nearest the plant-house so that communication between the two floors of the pharmacognosy department and the plant-house and the garden is most convenient.

"Some of the plant seeds are sown early in March or late in February in the plant-house. At the proper time the young plants are taken from the pots in which the seed was sown broadcast and placed into flats where they are allowed to develop until they are large enough to be transplanted into individual pots in some cases, or until they may be planted in the open in the garden. In the garden the necessary care is given to the needs of the individual

plants to the end that the best possible crop of each is secured. Most of the crop is not ready for gathering until the students return in September. The students do most of the harvesting, drying, assaying, powdering and preserving of the drugs, of course under proper direction and supervision. The work is not done in any haphazard way. In drying the harvest, for example, some drugs are dried by gas heat, others by steam heat. Full data are kept of the moisture before, and at stated times during the drying. The temperature is always under proper regulation. Certain of the drugs are subjected to assay and to other pharmacopœial tests, before they are finally declared ready for conversion into preparations in the pharmaceutical laboratories. We have found that most of the drugs we have undertaken to cultivate, meet the pharmacopœial requirements, and in some cases exceed them. Our digitalis, for example, so far has met, at the end of the first year, all the requirements exacted of the official drug. In this connection, it should be remembered that we begin cultivation in the plant-house early in March. No doubt other regions could demonstrate equally, that with proper care and conditions digitalis could be grown elsewhere in one season that would meet the two-year's requirement of the Pharmacopœia and thus much could be gained.

"This kind of work is, of course, still in its initial stage. So far we have not published any bulletins covering our research work along these lines, but we expect to be able to issue such bulletins soon. The interest in this kind of work is very pronounced. Within a period of about a year following the beginning of our work, we had several thousand letters inquiring how to grow some of the medicinal plants commercially. Some of the correspondents inquired for full information as to how to make a profit of from three to four thousand dollars per acre. We replied to all letters emphasizing the need of more than a mere agricultural training in the cultivation of medicinal plants, and we discouraged them, as we do now, this kind of cultivation by all who have not had some special pharmaceutical or medical training. However, we are advising pharmacists to look into the matter and cultivate some plant drugs We have advised some to cultivate such drugs as peppermint, spearmint, horehound, ginger, etc., even if they have not the courage to cultivate the more potent medicinal plants. There is no doubt in our minds that more money could be made by the cultivation of some of the commoner medicinal herbs, than could be made from the cultivation of potatoes or wheat. The point we emphasize is, that the cultivation of toxic medicinal plants ought not to be carried on by others than pharmacists or by those similarly qualified. We tell the farmers it is necessary for the successful cultivation of such drugs as digitalis, belladonna and stramonium, to have some pharmacologic training. The average farmer has not sufficient qualification without further preparation to cultivate drugs.

"It is not necessary for colleges of pharmacy to have an expensive plant in all cases for the cultivation of the more representative drugs. While we have expended something over $25,000.00 on our department of pharmacognosy, including the plant garden and plant laboratory, some institutions are doing creditable work with a much smaller and less representative equipment. Our beginning was a very modest one, but by perseverance we have finally been able to develop it to a certain degree. We found the greatest difficulty in creating a favorable sentiment for this kind of work among the authorities. When that was overcome, the rest followed naturally. Possibly others would succeed similarly if they made the beginning."

MR. MAYO:—"In view of the very great shortage in our supply of the drugs grown in Europe, it seems to me we ought to pay some attention to the immediate future supply, especially to such as are available in our own fields. I know we have a good many drugs that are indigenous growing in various sections, which we have not cultivated for various reasons. I am under the impression that, at the very high prices which now prevail, we won't have to convince the farmers of the advantage in cultivating some of these drugs. It might be well for this Association to see whether it is not feasible to make good at least a part of this shortage by a collection of indigenous drugs. I therefore move you, as carrying out this idea, that this section recommend to the general session that a committee of five be appointed to investigate the feasibility of a collection of this year's indigenous drugs to supplement the foreign supply, and to take such steps as may seem to them to be proper without incurring any expense to the association. The department of agriculture have issued bulletins on this subject and they might be very glad indeed to cooperate with us.

"I believe this Association should take the initiative and I therefore move you that the section recommend to the general session that a committee of five be appointed to investigate the matter, and if feasible, agitate for the collection of botanical drugs."

CHAIRMAN COOK:—"You have heard this motion, which is a very excellent one at this time because of the very peculiar condition of the market."

DR. SCHNEIDER:—"I second the motion. In addition to this idea advanced by Mr Mayo in his motion, I would like also to call more specific attention to the advisability of entering into the growing of medicinal plants right here in the United States as a commercial proposition. I have worked out in every detail the growing of belladonna as it should be grown, along the Pacific coast. To this end we have devoted I should say, roughly, about five or six thousand dollars, and I have put into it perhaps some five or six years of my time. So far we have sold perhaps, estimating it roughly, some fifteen tons of belladonna I think I could get as much as five dollars a pound for belladonna if I had it, but I have not got it. The price of

belladonna in the past has been so low we could not compete successfully. I think the motion should include also an instruction that the committee should look into the cultivation of the plants."

MR. MAYO:—"I will gladly accept that as an amendment."

CHAIRMAN COOK:—"You all understand the motion, I think, that a committee of five be appointed to look into the question of collecting and cultivating indigenous medicinal drugs and other drugs than those indigenous to assist, if possible, in relieving the drug market."

The motion was adopted.

CHAIRMAN COOK:—"The time has come now for the consideration of the exhibit which is before you. I would like to say a word or two about this exhibit, its purpose, the manner of collection of the samples, and the way in which I hope we can gain some benefit from its consideration.

"As you all know, the United States Pharmacopœia, 9th revision, and the National Formulary, 4th edition, are practically completed in their revision. The formulas which are proposed for inclusion, are available, and many of them have been published. The books are practically ready to print to-day. It was suggested that, at this section, we could be of great help to the committee of revision and the members of the association who were present would be very much interested no doubt in seeing an exhibit of the new preparations proposed, and those older preparations which have been modified. With that in view, a number of pharmacists, fifty or more, were asked each to prepare six preparations. We had excellent responses from these requests; I think all but about four, who had legitimate excuses, complied. The preparations on this row represent those made by the pharmacists very recently. The preparations on the three lower shelves are those which have been contributed from time to time by the sub-committees of the Revision Committee to substantiate their reports. Some of them are two, three and four years old. This exhibit was undertaken with a view then of giving the pharmacists here an opportunity to see what these preparations were, for the purpose of trying to clarify a few points which have been severely criticized and also for subsequent exhibition in association work. Anyone who is interested in having this exhibit for one of their meetings this winter, can arrange for it.

"It is the intention here this morning to select from this set of specimens a small group, ten or possibly fifteen, depending upon the time which we have, of these preparations which have been especially discussed, and about which there is some question as to the formula. Reports have been sent in,—quite a voluminous series of reports from all the pharmacists who have made these preparations. I have selected a group of about ten which we will take up first. When these have been given adequate consideration, and it must be limited to ten minutes or we will not be able to get through, we will then take up others if there is any time remaining. If you have any suggestions, may I ask you to write them out now and hand them to me? All of these recommendations will be transferred immediately to the revision committee.

"The first preparation I wish you to consider is the preparation of Syrupus Ferri Iodidi, which has been modified to the extent of omitting the dilute hypophosphorous acid as a preservative. Two samples have been submitted, one from Philadelphia, and one from Massachusetts. I have also a sample by Mr. Beringer. The results are before you. Apparently the new modification is a very great advantage.

"The next preparation I wish to have you consider is Magnesiæ Magma. This preparation was formerly in the National Formulary. It has been introduced now into the United States Pharmacopœia. The formula that has been approved is one that was adopted by the National Formulary Revision Committee before it was known the United States Pharmacopœia would adopt the preparation. I have here five samples made up by this new formula. Has anyone anything to say of this preparation? The new formula has been published in the Journals in the last few years. This is a modification of the present National Formulary formula, and I should be glad to hear anyone discuss this in assisting the Revision Committee to a final conclusion."

MR. HOSTMANN:—"The main objection I have to Mr. Beringer's formula was the long time of washing and the quantity of water required. I do not believe it is necessary to wash with distilled water. If you want a white preparation, it is necessary to have water that is absolutely free from iron. When we were working on it, we took a large quantity of hydrant water, boiled it first and then shook it up with magnesia oxide and magnesia carbonate and let it settle and decant and used it for washing purposes. I have not had any experience with the formula that is proposed for adoption, but I do know that you get a very nice preparation, a very smooth preparation, one that pours easily and stands up very well. You do have to wash a very long while and must be very, very careful that your magma never dries on cheese cloth."

S. L. HILTON:—"The preparation itself is a mechanical one pure and simple, and one that cannot be hurried in its manufacture; the best results I have been able to obtain is by sedimentation and not by straining; straining is liable to make the finished product more or less lumpy so that it will be impossible to obtain a smooth product. Further, the straining process may be satisfactory for a litre or two, but if you make a quantity of the preparation, for instance, forty gallons, how are you going to strain that amount of magma? It is impossible

to handle it in that way. Consequently, for large quantities, sedimentation is far better and I have also found that for small quantities it is equally satisfactory, more cleanly, and gives a better finished product. I use a much stronger solution of Magnesium Sulphate and solution of Sodium Hydroxide. I do not use hot solutions, as I have found by experiment they are not necessary. The condition of the magma formed, is in my judgment governed entirely by the way the solution of Sodium Hydroxide is added and the rapidity of agitation of the solutions at the time of mixing. The strength of the magma as obtained by the formula suggested, that is the amount of Magnesium Hydroxide in suspension, is insufficient, it is far less than the proprietary preparations for the reason that the solutions you start with are not strong enough. The Magma Magnesia obtained by this formula will assay only about five and a fraction *per cent.*, the proprietary will assay six *per cent.* The product I have been making will assay from six and one-half to six and three-quarters *per cent.* and after assay I adjust same to six and one-half *per cent.*

"Unless water free from iron and organic matter, can be obtained it is necessary to use distilled water or the product will not be perfectly white, and some attention should be paid as to the amount of sulphate remaining in the finished product. It is not necessary to carry the washing to the point where all or practically all of the sulphate is removed: a certain definite amount of sulphate remaining in the finished magma has a decided advantage; it assists the laxative action of the preparation and, unless this be excessive, it does not have any unpleasant taste in the finished preparation. I have adopted a standard of my own on this point and every lot made is adjusted to contain a definite amount. I think this should be taken into consideration and provided for."

CHAIRMAN COOK:—"The next preparation is the magma bismuthi. The formula has not been an official formula in any of the standard books. This is now proposed for inclusion in the pharmacopœia. We have a number of criticisms of the formula.

"Dr. Francis can probably tell us something about this phase of the formula."

DR. J. M. FRANCIS:—"Because of limited time I did not intend to offer any suggestions, but as it has been requested by the chairman, I would say that my extensive experience in the manufacture of Milk of Magnesia and Milk of Bismuth warrants the statement that there are several details of the process which demand more careful consideration.

"In the case of Milk of Bismuth, containing the quantities of ingredients specified in the proposed formula, it is a fact beyond dispute that by varying the temperature and the several manipulative details, one can produce a Milk of Bismuth so dense, or in other words, so thick that it cannot be poured out of a bottle having an ordinary mouth, or, on the other hand, a magma can be produced consisting of such a coarse powder that an excessive proportion of water will separate on standing and the product will be wholly unfit for use. The same statement as to the possibility of varying the density of the magma is equally true in the production of Milk of Magnesia.

"I have taken occasion to criticise the formulas for both the Milk of Bismuth and the Milk of Magnesia, to the effect that the maximum quantity of water-soluble salts allowed to be present, is entirely too small. The chief item of expense in the preparation of both of these preparations, is the large volume of distilled or filtered water required for washing, or for the removal of the soluble salts produced by the chemical reaction. If this washing is extended, so as to greatly increase the volume of water necessary, the cost of the water will actually exceed the cost of the medicament employed. Certainly, the washing of the magma should be continued until only traces of the soluble salts remain, but a considerably greater quantity of the soluble sulphates or chlorides should be admitted than is proposed by the formulas which have been offered for adoption. What harm could possibly result either to the stability of the preparation or to the patient using the Milk of Magnesia or the Milk of Bismuth, by the presence of traces of soluble chlorides or sulphates?

"In this connection, it is also well to consider the great variation in the content of hydrated oxide of magnesia on the one hand and hydrated oxide of bismuth on the other, in the several preparations now very widely marketed by different firms. There should be some uniformity, and while the degree of concentration should be placed reasonably high, it should also be kept within the limits of economical production.

"Another fact brought out by Prof. Cook, in the previous discussion, is the question of indicating the value of these two preparations in terms which are comprehensible to the average physicians. While a statement to the effect that each ounce of Milk of Bismuth contains a given number of grains of hydrated oxide of Bismuth is scientifically correct, it means little to the average doctor. Physicians seldom or never prescribe the oxide of bismuth; this is not a commercial article. They are, however, entirely familiar with the dose of subnitrate of bismuth, and if we state that each dram or each ounce of milk of bismuth is equivalent to ——— grains of bismuth subnitrate, they can easily determine dosage.

"It should also not be forgotten that in the process of manufacturing, milk of bismuth should always be left distinctly acid in reaction, as otherwise it will shortly revert to the alkaline or neutral state, and in this condition will rapidly discolor on exposure to light. Sometimes even a dark mirror of reduced bismuth will cover the entire inner surface of the bottle."

CHAIRMAN COOK:—"The next preparation is the solution of iron albuminate of the National Formulary. I will ask Prof. LaPierre his difficulty."

PROF. LAPIERRE:—"My difficulty was in reference to the addition of sodium citrate. I had no difficulty at all in the solution of albumen or in the addition of iron to the albumen. But at the time of the addition of the sodium citrate the precipitation of the iron occurred and it would not go again in solution notwithstanding all sorts of arrangements to coax it back into solution again. I tried it with a smaller quantity of sodium citrate with no better results. I am open to instruction along that line. I believe that is going to be the trouble with that preparation."

CHAIRMAN COOK:—"Anyone else have a suggestion to make in regard to this difficulty? I might say that the National Formulary Committee in preparing this formula have found it necessary to advise that the iron oxychloride be freshly made and used immediately."

PROF. LAPIERRE:—"I made the oxychloride fresh and we had no difficulties with that same iron in the preparation of peptonates."

CHAIRMAN COOK:—"The next preparation is one which has been causing discussion back and forth during the entire revision work of the pharmacopœia. There is the much mooted question of soft soap, one made from cotton-seed oil, the other from linseed oil. The subcommittees that have had this preparation in charge have unanimously agreed—probably I should not say unanimously—but the committees have all agreed to introduce the cotton seed oil soap. I personally believe it to be a great improvement over the other formula. We have here samples of the U. S. P. linseed oil soap and the proposed cotton seed oil soap.

"The chief objection to this formula is that the claim is made that it is not as detergent. Is there any discussion on this subject. I know that the cotton seed oil soap particularly has been used very extensively for a number of years by some larger users, and it has proven very satisfactory.

"If there is no discussion, the next preparation is compound solution of cresol, which has caused very much criticism. The present formula as now proposed for the pharmacopœia, calls for the saponification of linseed oil, making linseed oil soap, and the subsequent solution of that in cresol."

PROF. SCOVILLE:—"In other words, you will find that cresol is as good a solvent for soap as alcohol, if you dissolve your oil directly in the cresol and then add the alkali solution; saponification takes place in the cold, and that quickly. But you cannot use the preparation at once because you find that it clouds when diluted. It does not mix immediately. The difficulty there is that the saponification is not complete, although your solution looks perfectly clear. You can remedy that, if you choose, by heating it, but if you do that you darken your preparation. In order to get a light colored preparation it is necessary that you should let it stand."

CHAIRMAN COOK:—"The main argument in the committee against the use of directly dissolved soap, was that large variation was found in the soft soaps in the market and it was feared they would not be official soft soap. That led the committee to recommend the making of the soap. Again, I believe an inference would be permitted here, by the clause in the pharmacopœia to use a soft soap as a starting point, if we know the end point is all right."

MR. I. A. BECKER:—"I have had no complaint from the doctors, or in making a perfect preparation so far as its pharmaceutical preparation is concerned, by simply taking the cresol in equal weight to the soft soap and stirring it up and letting it stand twenty-four hours to thirty-six hours, when it readily dissolves. I might add that that thick solution readily goes through filter paper."

CHAIRMAN COOK:—"If there is no further discussion we will go to the next preparation, Glycerite of Bismuth.

"I have understood that Prof. Scoville has made a special study of this preparation, and we will be glad to hear what he has to say."

MR. W. L. SCOVILLE:—"The suggestion I made on the preparation, is that according to the present formula there is a loss of ten to twenty *per cent.* of your bismuth. Still, of course, it is an official preparation. The loss comes from the fact that in the very acid mixture that is first obtained,—not solution but mixture—after the bismuth is dissolved in nitric acid, we add tartaric acid, and then bicarbonate of soda, and we get a heavy precipitate of bismuth tartrate. That is supposed to carry down all the bismuth, but it does not. The solution is entirely too acid, and my modification simply calls for the addition of some bicarbonate of soda so as to throw down as much as possible of the bismuth. I have never been able to get it all down. The formula makes that loss within five *per cent.*, that was as close as I was able to make it. The formula, as submitted, would probably make nearer to 950 cc. instead of 1000."

CHAIRMAN COOK:—"Anyone else have anything to say with regard to this preparation of Glycerite of Bismuth? (No response.)

"The next preparation is the elixir of the phosphates of iron, quinine and strychnia. This preparation has received merited discussion *pro* and *con*. The formula which is proposed is one submitted by Mr. Beringer at the meeting of the New Jersey Pharmaceutical Association some time ago. There has been another formula proposed by Prof. Caspari, which is a modification of the one now official, which requires no neutralization. It is allowed to re-

main acid. But the chief objection to the formula of Mr. Beringer is the tendency to darken slightly. At temperatures such as we have here this morning, the preparation is a very beautiful one. It is made quickly. It does not vary quickly in color; it is recommended to be kept in amber colored bottles, but as soon as the temperature reaches that of ordinary fall weather, precipitation occurs in some instances.

"I have put it directly on the ice and you see the precipitation.

"The Caspari formula has the same precipitation. I have had them both on the ice. So we have the peculiar situation of having two formulas each having the same objection.

"Here is another of the Beringer formulas proposed, showing the precipitation. I will be glad to have some discussion on this point."

MR. W. L. SCOVILLE:—"There is no more delicate or troublesome formula in pharmacy today than that of the elixir of phosphates of iron, quinine and strychnia. It is a very easy thing to make a preparation that will look good for a week or two, or a month or two; it is another proposition to make one that will stand for a year or two, and stand changes of temperature and exposure.

"There are two or three things about that formula that I do not think are very much understood. One is the action of light on the ferric salt, particularly in the presence of citrates. So I ask, is it understood that light causes the decomposition of citrates by ferric salts? A normal citrate will entirely be decomposed by the ferric salt if it is exposed to the light. That is one reason why that elixir should never be put up in a white bottle, no matter what your formula is.

"Another difficulty is, that if you get in an organic acid in the presence of quinine, you have some of your quinine changed to a poisonous form, quinotoxin. It is the explanation of some disintegrations of quinine, perhaps,—troublesome reactions; illness after taking quinine. It occurs in the presence of quinine with organic acids. With mineral acids you are not likely to have any difficulty.

"One of the difficulties in the past, of course, has been the presence of sugar. You cannot put sugar in a preparation of that kind without it darkening. The new formula uses glycerin, which is a decided advantage.

"The action of light, the influence of quinine and the acidity, all have an important bearing on that preparation. I think I have made, without any exaggeration whatever, 200 tests of formulas for elixir of phosphates of iron, quinine and strychnia. The more I make the more I respect that preparation. It has got me guessing. I do not feel discouraged over it, however. I expect some day to have something that is really worth while. I do not know whether I have it now or not. It takes time to find out. The difficulty is, I cannot find out for a year and a half whether I have what I expect or not. I thought I had it six months ago, but some difficulties came up. I have some more standing. I have some standing in a wooden box outside my window. It is going to stand there all the time, through summer and winter. The only thing I exclude is the light. Any formula that would stand the light would not be a ferric solution; you might make a ferrous solution."

DR. WILBERT:—"I believe an immense amount of time and money has been wasted on this preparation, and for no real good reason.

"A number of years ago Prof. Diehl introduced in the National Formulary his well known formula for elixir of pyrophosphate of iron, quinine and strychnia. This preparation is easily made, can in fact be thrown together, and will keep almost indefinitely without much change. I think we have devoted altogether too much time to the fetish that the ingredients must be present in the form of phosphates. The elixir of pyrophosphate is readily made and will stand fairly well."

MR. W. L. SCOVILLE:—"I would like to call Mr. Wilbert's attention to the sample of elixir of pyrophosphate of iron, quinine and strychnia on the case there."

CHAIRMAN COOK:—"Any further suggestions about this preparation? I would be very glad to have the help of the members."

"All these criticisms, I hope you understand will be very carefully noted and referred immediately to the committee on revision.

"The next preparation is the new aromatic fluid glycerate of cascara sagrada. I have three samples here. This is a new preparation and is here for your observation.

"The next preparation is the tincture of ferri citro-chloridi of the National Formulary, the basis of the making of elixir iron, quinine and strychnia without the phosphate. There was considerable criticism of this formula. It will be referred to the committee on revision."

MR. WM. A. HALL:—"Having had this work in hand I did not expect any particular trouble, but I was particular in getting a solution of chloride of iron for my base that was strictly U. S. P. and with a gravity of 1.310. Using that as the basis, taking the requisite quantity of sodium citrate called for, 425 grammes, I found I did not have a green but a brown solution. Of course, I knew I did not have enough sodium citrate. I kept on adding until I had added 100 grammes, making 525 grammes, to make the reaction complete as shown by the emerald green color. Then I took another sample of solution of iron, which had a gravity of the 1890 U. S. P., namely, 1.290, and found 425 grammes sodium citrate was practically enough. I added 20 grammes more, but the little difference might be simply the little variation in reading the gravity. I would not criticize it on that score. But with the

specific gravity of 1.310 it certainly required more sodium citrate. Then I began looking it up and sent the memoranda of the details to our Chairman for action before the National Formulary Committee.

"With the gravity of a solution of iron of the last pharmacopœia, the trouble is that we have increased the gravity or the strength of the solution of iron in the present pharmacopœia beyond that of the last and we have not changed the quantity of sodium citrate. That is the whole substance of it. So that it would seem as though it will have to be threshed out a little more; that the sodium citrate will have to be increased."

MR. F. M. APPLE:—"That was my experience in making up the preparation."

CHAIRMAN COOK:—"The next preparation is a new preparation for the National Formulary, a compound solution of phosphates. This preparation was made with the intention that it would form a stable concentrated solution for the making of a number of other preparations which call for phosphates; notably the syrup of phosphates.

"I have samples here made over a year, and one made more recently, and quite extensive criticism of this formula by Mr. Hensel of Denver, together with criticism from Dr. Englehardt of Baltimore. The criticisms will be referred to the National Formulary Committee. Has anyone anything to say about it?

"If not, the next preparation is the syrup made from this solution, which is also here for you to see, showing quite a striking difference in the two preparations made by the two men.

"The next preparation is the tincture of cudbear of the National Formulary. This preparation has been the cause of probably more discussion in the National Formulary Committee than any other one preparation. The preparations are here before you with some notes with regard to difficulty in percolation, which has been the old story in regard to this preparation.

"The next preparation is an antiseptic solution of pepsin. This preparation received considerable comment when it was published in the Journal a number of years ago. It is a stimulating antiseptic wash for wounds, I believe."

DR. WILBERT:—"There is nothing to say except that it is a wash used for cleaning and flushing wounds. It has been used extensively in surgical practice and with satisfaction. We have made it at the hospital for a number of years and it has been used there and in other places. It is not intended at all for internal use."

MR. EDSEL A. RUDDIMAN:—"What effect has the antiseptics on the action of pepsin? Do they interfere there with the digestive action of pepsin?"

DR. WILBERT:—"Possibly they do, but we make the preparation up fresh. It is never kept more than a couple of months. The loss in activity is not material and we have never had any complaint from it, at least not in my time."

CHAIRMAN COOK:—"The next preparation is the syrup of hydriodic acid. The formula is here rather for you to see than to comment upon specially. I might say that glycerin has been omitted in the preparation of syrup of hydriodic acid. This was originally proposed but found to be objectionable. The formula is modified to this extent. This is practically the same as the present U. S. P. excepting that the amount of hydriodic acid is slightly increased so that instead of one *per cent.* I think we will have about 1.25 *per cent.* present. It is also made up instead of by weight, by mixing volumes.

"The next preparation that I have on my list is solution of magnesia citrate. Unfortunately, the sample was broken in transportation. I have had a number of criticisms. Anyone who would like to say anything about the newly proposed formula for solution of magnesium citrate?

"If there is no discussion, the next preparation will be elixir of phosphorus. The preparations you have before you. The old criticism that has come in, is that they prefer the old method. The formula itself is probably satisfactory.

"That concludes the preparations that I had specifically selected in filling out the program as I had planned it.

"I would now ask for the reading of the paper on zinc oxide ointment by Mr. Ernest R. Jones."

A NEEDED CHANGE IN OINTMENT ZINC OXIDE, U. S. P.

ERNEST R. JONES, PH. C.

It is a well-known fact that this ointment, after standing for a little while, becomes very granular and is anything but a sample of pharmaceutical elegance.

Most of the previous papers on this subject have ascribed the cause as due to the zinc oxide or to faulty compounding of the formula, and have suggested changes in the manipulation of the present formula which were expected to produce a permanently smooth ointment.

Some have advocated rubbing the zinc oxide until thoroughly smooth with a small quantity of a fixed oil, such as castor, olive or cottonseed oil; then incorporating the lard. Others have tried the expedient of first bolting the zinc oxide very finely. Another endeavored to accomplish the same purpose by a process of elutriating the zinc oxide.

It is very doubtful if any of these persons have kept their product under observation during a sufficient length of time, say perhaps a year, in order that it could have encountered the different changes in temperature. I have tried all of the different suggestions, but have not as yet found any that solved the difficulties. I recently had an opportunity to observe a one-pound sample of U. S. P. ointment which had been made according to one of these new schemes of manipulation and which, after setting undisturbed on the shelf for over a year, was apparently as good as when made. It seemed to have solved the difficulty, until upon digging down toward the bottom of it, we found that the lower portion was soft, granular, and almost semi-liquid, whereas the top portion was smooth and hard. This would indicate that a separation of the constituents of the lard had taken place.

The writer once had an idea that possibly enough saponification took place between the free acids of the lard and the zinc oxide to liberate enough water to cause the trouble. There is no doubt that some zinc compounds are formed with the acids, for they may be separated with ether. Careful estimation of the amount of water present in the ingredients before making them into the ointment, and estimations of the amount present in the ointment after standing six months, showed that this reaction does not take place to a degree sufficient to cause the granulation.

With a view to determining whether the granulation was caused by the zinc oxide not being in a fine enough state of division, my co-worker, Mr. French, made up a sample following the U. S. P. directions carefully, and then passed it through an ointment mill ten times. Surely the zinc oxide must have been fine enough after this treatment to eliminate any cause for trouble in this respect. However, after a short while it was just as granular as the others.

You gentlemen are all familiar with the composition of lard and know that its constituents vary considerably in physical characteristics. The glyceride of oleic acid is a liquid, while those of palmitic and stearic are solids. If you will examine good lard under a low power microscope, you will observe that it has a very "seedy" appearance, indicating that it is not entirely a homogenous mixture of the combined glycerides. As a warmer temperature is attained, my opinion is that the olein, on account of its liquid nature has a tendency to separate and that upon cooling again without stirring, the stearin and palmitin being more solid, is partly separated in such a manner as to cause the granular appearance.

I have here for your inspection, a sample of benzoinated lard which, four months ago, was as nice a product as one could desire. Granular lumps are now perceptible to the naked eye. This is strong proof that the cause of the trouble is not due to the zinc oxide, but rather to the lard.

My conclusion is then, that just as long as we continue to use benzoinated lard for a base, we must continue to expect trouble from this ointment.

That the lard is the cause of the granulation can be proved by substituting

petrolatum in its place. Such an ointment will remain smooth for an indefinite period. I have here a sample that is nearly one year old, and is perfect in appearance.

It is not my purpose to suggest another method for manipulating the present formula so as to make a permanently smooth ointment, for because of the peculiar composition of the lard, which was previously explained, I do not believe it can be done.

I sincerely believe, however, that the next edition of the U. S. P. should replace the benzoinated lard with a petrolatum base. This idea is not original with the writer. The Swiss and French Pharmacopœias use a base of white petrolatum, thus proving that two countries are aware of its superiority. Several manufacturing houses have, during the past few years, made a special ointment with a petrolatum base, in addition to the regular U. S. P. product.

The question may be raised that lard is better absorbed by the skin than is petrolatum, and according to some recent research reports it is quite likely that it is. Cushny says that "emollient preparations promote the absorption by the skin of drugs dissolved in them because the fat mixes readily with the thin layer of oily sebaceous matter which covers the skin." Inasmuch as the zinc oxide is not dissolved in the lard, the difference in absorption value between lard and petrolatum is of little value in this case. Just how zinc oxide ointment acts when applied to the skin, is hard to determine. Some claim it to be merely soothing. If so, would not the result be just as satisfactory without the zinc oxide? Others claim it to be healing because of its astringency. This seems quite probable, and Cushny says the astringency of zinc compounds is due to their forming insoluble albuminates. This is purely, then, a local action and in my opinion should take place from a petrolatum base as well as from lard.

If the choice of base has no advantage from a therapeutic standpoint, but has from the pharmaceutical, why should we not make a change in its formula?

The simplest formula would consist of 20% of zinc oxide and 80% white petrolatum. This makes a fine product, but is quite a bit softer than we are accustomed to see it and would therefore alter the consistency of every other established preparation which it enters into. The following formula, which is hardened with white wax gives a product resembling the consistency of the present ointment.

Zinc Oxide	200 Gm.
White Wax	150 Gm.
White Petrolatum	650 Gm.

Rub the zinc oxide, which must be free from gritty particles, with an equal weight of melted white petrolatum until smooth and add to this the remainder of the white petrolatum which has been previously melted with the white wax. Strain the ointment while warm and stir thoroughly until it congeals.

One more point of interest, is that the U. S. P. ointment is stronger than that of any other Pharmacopœia. Those of the Swiss, Spanish, Japanese, French, Netherlands and German Pharmacopœia contain 10% of zinc oxide; the Austrian and British, 15%; and finally the U. S. P. which stands alone with 20%. I believe that 10% of zinc oxide is quite sufficient, inasmuch as it is probably not absorbed by the skin, and the extra 10% is wasted.

These suggestions are presented, not as representing any new discovery, but with an idea of trying to convince the Revision Committee that the time has arrived to change the base of this ointment and avoid inflicting another ten years of hardship on the pharmacist.

The white petrolatum base makes a smooth, white ointment which does not granulate or turn rancid. Why not adopt it in the next U. S. P.?

DISCUSSION.

MR. STOLZ:—"That paper appeals to me, and I thank the gentleman for having written such a beautiful paper, because I think zinc ointment is a very serious question with a great many of us.

"A number of the manufacturing houses put up zinc oxide ointment and we buy it in twenty-five and fifty pound lots. We happened to get in a jar from Squibb & Son and when we had used about ten pounds of it it became granulated. We took it up with the representative and he simply told me 'Mr. Stolz, we make our ointment U. S. P. with benzoated lard. We hear that complaint all over.'

"I would like to ask Mr. Cook if they have done anything in the new Pharmacopœia toward changing the base."

CHAIRMAN COOK:—"The formula is to be retained."

MR. GRAY:—"I have been serving the leading physicians of Chicago in a hospital for eight years, and we have used nothing but the vaseline base for zinc ointment."

MR. I. A. BECKER:—"My house also furnishes a zinc oxide ointment with vaseline base."

DR. WILBERT:—"We have been using it for twenty-five years,—so long as this is an experience meeting."

MR. STOLZ:—"You will find ninety *per cent.* of manufacturing houses sending out zinc oxide ointment with petrolatum base."

MR. E. R. SELZER:—"I move that this section recommend to the Revision Committee the adoption of petrolatum as a vehicle instead of benzoated lard."

MR. WILBERT:—"I second the motion."

CHAIRMAN COOK:—"The motion before the house is that it is the sense of this section or at least it is recommended by this section that the Revision Committee adopt petrolatum instead of benzoated lard in zinc oxide ointment."

Motion duly carried.

MR. L. C. HOPP:—"I think the great trouble with zinc oxide ointment is that the benzoated lard becomes slightly rancid, and you can overcome that to a certain extent by using a little alkali mixing it with your lard. I tried that and it worked out all right. We have doctors who insist that lard be used in their preparations, and one man in particular, when he is prescribing zinc oxide ointment and don't know where the prescription will be put up, specifies 'This shall be made up with benzoated lard.'"

MR. GRAY:—"I would suggest, if it is in order, that we classify our ointment absorbent and non-absorbent. I believe some pharmacopœias do that."

MR. JONES:—"I anticipated some argument on this question and I would like to say I have worked on some experiments to see if we could not use a mixed base of benzoated lard and petrolatum, and I found I could use twenty-five *per cent.* of lard and still make quite a good ointment, but the experiment has not been standing long enough to warrant me in incorporating it in the paper. They have been standing about six months and look very good."

MR. W. F. JACKMAN:—"This is one point I do not think we have considered, a number of our citizens in the United States object to the hog on religious grounds as well as sanitary grounds, and to meet such a situation one-fourth wool fat and three-fourths petrolatum I think is fully equivalent to the formula under discussion."

CHAIRMAN COOK:—"The next order of business on the program is the election of officers, but as explained to the section on Tuesday, the Council have directed or have arranged in their own minds that this section be discontinued as a section. It becomes a special committee of the Practical Pharmacy section. The chairman of that special committee is to be appointed by the Section of Practical Pharmacy.

"All the other set features having been taken care of, I will offer the opportunity at this time,—it is just twenty minutes to twelve and the automobile ride, I believe, is at 2:30—I will allow any time now to the consideration of any one of these preparations before you, which you may be specifically interested in. We will get the samples out here and give you an opportunity to tell briefly, if possible, any difficulty you may have, so these criticisms may go before the committee. All the criticisms that have come in will be before the committee."

DR. WILBERT:—"Before the members leave the room, and in view of the fact that this is the last session of this particular section, I would like to move a vote of thanks to the Chairman for the excellent work he has done in connection with this particular section. I think his getting together this exhibition is an object lesson that may well be appreciated, and the only unfortunate thing is that more men in the retail business have not been able to see it

or have not taken time to look at the various preparations of the exhibit and profit by the possible short-comings that have been evidenced thereby.

"I would move, Mr. Secretary, that a rising vote of thanks be extended to the Chairm for the excellent work he has done in this section."

SECRETARY THUM:—"A motion has been made and seconded that a vote of thanks be extended to Chairman Cook for the excellent work he has performed in this section. All in favor of this motion will please rise."

(Unanimously carried.)

CHAIRMAN COOK:—"Thank you, gentlemen. I am sure that the success of this section has depended upon the splendid coöperation of about fifty members of the A. Ph. A., and thanks are due them.

"If there is no special preparation you wish to discuss, a motion to adjourn will be in order."

DR. WILBERT:—"I make the motion, Mr. Chairman."

Motion carried.

HIGH EXPLOSIVES IN WARFARE.

The high explosives being used for artillery shells in the war constitute the subject of an interesting article in *Nature*. For military purposes explosives of the nitro-glycerin class and many others are excluded, because the military high explosive must be sufficiently insensitive to shock to prevent its being exploded when struck by projectiles or when submitted to the shock of being fired from a gun as the charge of shell. Gun-cotton, containing a considerable amount of moisture, was formerly used for many years. This provided an excellent and safe explosive for military mines and purposes of destruction and as a charge for torpedoes, but was not suited for use in shells. The high explosives chiefly being used for shell-firing at present are picric acid, trinitrotoluol, and ammonal. Picric acid, which superseded black gunpowder, has been in use in most countries under the names of melinite, lyddite, shimose powder, etc. But, although sufficiently insensitive to shock, it has the disadvantage of readily attacking metals and forming picrates, which are much more sensitive and liable to explosion. Ammonal is a mixture of ammonium nitrate, trinitrotoluol, charcoal, and aluminum in fine powder. It is safer and more powerful than picric acid, but needs to be very carefully guarded from moisture on account of the hygroscopic character of ammonium nitrate. Trinitrotoluol, known under the names of Trotyl, Tritolo, Tolite, Tritol, Trilite, and T.N.T., is the most widely used military high explosive. It is less sensitive to shock than picric acid, is chemically stable and unaffected by water and metals, and can be fused and run into shells in the molten state. Hard blocks of suitable size and shape are covered by electroplating them with copper, to prevent their being broken or chipped. The destructive effect of an explosion is caused by the almost instantaneous conversion of the solid explosive into gases at a very high temperature, with the consequent sudden exertion of an enormous pressure. In addition, where the explosion takes place in a closed space, the resulting gases, especially carbon dioxide, may have poisonous effects on anyone having to breathe them.

Scientific Section

Papers Presented at the Sixty-Second Annual Convention

MORPHINE NITRATE AND MORPHINE ACETATE.*

H. ENGELHARDT AND O. E. WINTERS.

The variation in purity of commercial morphine nitrate and morphine acetate is very marked, as we have found in our experiments on numerous samples of the salts. In order to find out the extent of such variations the following experiments were undertaken with five samples of the salts, manufactured by different firms and purchased on the open market. The samples were marked I-II-III-IV-V and the methods applied for estimating the purity were the following:

I. Process similar to the U. S. P. method for estimating morphine in opium: —.85 gm. of the morphine salt is dissolved in 15cc. of water, and the solution is mixed with 7.5cc. of alcohol, 15cc. of ether and 2.2cc. of ammonia water. The mixture is then shaken for ten minutes and allowed to stand over night. The crystallized morphine is collected on a filter, washed with etherized water and dried at 60° to constant weight.

II. Puckner's Method:—(Journ. Amer. Med. Assn., Sept. 13, 1913)—.5 gm. of the morphine salt is dissolved in 20cc. of water and mixed with 0.25cc. of ammonia water, the mixture is shaken for five minutes and allowed to stand over night. The morphine is collected on a filter, washed with morphinated water, dried at 60° to a constant weight. To the amount of morphine found .0076 gms. is added, the amount of morphine soluble in the aqueous liquid.

III. Nitron Method:—.35 gms. of the morphine salt is dissolved in 50cc. of water and mixed with about 5cc. of a 10 *per cent.* solution of nitron in 5 *per cent.* acetic acid. After allowing the mixture to stand in a refrigerator for two to three hours it is filtered through a Gooch crucible and the precipitate is washed with ice water (using not more than 10cc. of the latter) and dried to constant weight. The weight multiplied by .93 gives the amount of morphine nitrate, according to the equation:—

$$\underset{\text{Nitron nitrate}}{C_{20}H_{16}N_4HNO_3} = \underset{\text{Morphine nitrate}}{C_{17}H_{19}NO_3HNO_3}$$

IV. Schäfer Method:—(Amer. Journ. Pharm., 1913, page 139.)—.85 gm. of the morphine salt is finely triturated in a small mortar with a sufficient quantity of purified sand and an excess of sodium bicarbonate. The mass is moistened with a little water and allowed to dry again at a temperature not exceeding 30° to 40°. The mixture is then transferred to an Erlenmeyer flask, and to the con-

* Scientific Section at Detroit.

tents of the flask a freshly prepared mixture, consisting of one volume of methyl alcohol and four volumes of chloroform is added, and the mortar is carefully rinsed with the same liquid. The mixture is allowed to stand for one hour with moderate but frequent shaking. The liquid is then filtered through a small filter and the residue washed thoroughly with three to four portions of about 10cc. each of the above solvent. The combined filtrate and wash-liquids are distilled off, the residue taken up with an excess of N/20 sulphuric acid and the excess of the acid titrated in the usual way using cochineal or methyl red as indicator.

V. a. Isobutyl alcohol-chloroform method.—.5 gm. of the morphine salt is dissolved in 20cc. of water, the mixture made alkaline with sodium bicarbonate and shaken out with 50cc. of a mixture of equal parts of isobutyl alcohol-chloroform. The chloroformic solution is drawn into another separator and the aqueous solution shaken out twice more with each 30cc. of the above chloroform-isobutyl alcohol mixture. The combined alcohol-chloroform solutions are shaken out once with water in order to remove any suspended alkali and are then shaken out with 20cc. of tenth-normal sulphuric acid, followed by two portions of 20cc. each of water. The combined aqueous solutions are then titrated with standardized alkali in the usual way.

V. b. As an alternative process 0.5 gm. of the morphine salt was dissolved in 20cc. of water, the aqueous solution made faintly alkaline with ammonia and then shaken out as just given with various portions of a mixture of isobutyl alcohol-chloroform. The combined alcohol-chloroform solutions were then evaporated in a vacuum and the residue titrated in the usual way.

VI. Vanderkleed Method:—(*Journ. Amer. Pharm. Assn., Aug.,* 1913.)—A solution of the morphine salt equivalent to about .2 gm. of morphine is dissolved in 15 cc. of water in a separator, the solution mixed with amyl alcohol, made alkaline with the ammonia water and heated on a steam-bath at 80° for about five minutes. The mixture is then shaken for about two minutes and, after allowing to cool, the aqueous layer is drawn off into a second separator and the amyl alcohol transferred into a 300 cc. Erlenmeyer flask. The aqueous solution is extracted twice more with amyl alcohol in the same way. The combined amyl-alcoholic solutions are evaporated in an oil-bath to dryness. (We have found evaporating solution in a vacuum gives better results.) The residue is dissolved in 20 cc. of N/20 sulphuric acid and the excess of acid is titrated back with N/20 potassium hydroxide solution, using methyl red as indicator.

VII. Buchbinder Method:—.3 gm. of the morphine salt is dissolved in 30 cc. of lime water; to the solution .5 gm. of ammonia chloride is added and 30 cc. of a mixture consisting of two parts of chloroform and one part of alcohol by volume. After shaking the mixture well, the chloroform-alcohol solution is drawn off into another separator and the aqueous solution shaken out with various portions of the chloroform until the latter no longer takes up morphine. (We have found that even by extracting the aqueous solution ten times with chloroform not all the morphine is removed, but that only about three shakings are necessary, when chloroform containing about 10 *per cent.* of alcohol is used for the extraction.) The combined chloroform-alcohol solutions are evaporated to dryness, the residue is dissolved in 10 cc. of neutral alcohol and a convenient excess of N/50 sul-

phuric acid is added. The alcohol is then evaporated and the acid solution titrated with N/50 potassium hydroxide, using either cochineal or methyl red as indicator. The results given below were obtained by using a chloroform-alcohol mixture throughout.

In order to determine the accuracy of these methods we applied them to pure morphine, which had been obtained by recrystallizing the alkaloid several times from the alcohol. When titrated the alkaloid showed a purity of 100.0 *per cent.* and 99.7 *per cent.*

The results obtained with pure morphine, the samples of morphine nitrate and morphine acetate are given in the following table:—

	U. S. P. Process	Puckner Method	Nitron Method	Schafer Method	Isobutyl alcohol-chloroform Method		Amyl alcohol Method	Modified Buchbinder Method
PURE MORPHINE								
		96.6%		100.3%	98.2%		98.6%	98.7%
		97.6		102.5				98.2
MORPHINE NITRATE.								
I.	85.9%	87.9	87.1	97.4	84.8	88.04*	86.4*	83.5
				95.7				
II.	88.0	86.5	87.2	90.8	82.9	88.5*	85.2*	86.6
				93.6				
III.	90.7	88.7	90.9	92.2	88.0	86.8*	83.4*	86.7
				92.2				
IV.	87.8	89.9	89.6	92.6	89.7	84.7*	86.3*	86.4
				93.2				
V.	87.0	88.5	89.3	90.8	87.5	85.8*	84.2*	86.3
				94.5				
MORPHINE ACETATE.								
I.	95.46	93.5		121	99.8		101.3*	96.8
II.	90.63	86.8		108	97.8		98.1*	92.2
III.	92.19	93.5		112	93.8		97.7*	93.8
IV.	93.08	92.6		113	93.8		97.2*	95.7
V.	91.41	88.0		117	97.0		98.4*	94.3

* These results were obtained by evaporating the solutions of the morphine in the immiscible solution to dryness in a vacuum.

From these experiments it is evident that the purity of morphine nitrate rarely is above 90 *per cent.* and that the purity of morphine acetate is also far below 100 *per cent.* The latter is the more surprising as every sample exhibited a strong odor of acetic acid. If there is a loss of acetic acid, the percentage of morphine in the sample should be above 100 *per cent.*, provided the sample originally showed this purity.

In view of these facts it would be advisable for the Sub-Committee on Organic Chemicals of the Revision Committee of the U. S. P. to take this matter up, give requirements for a certain purity of these salts and furnish at the same time a reliable assay process.

By all the methods given in this paper the total alkaloids present in the morphine salts are determined. It is a well-known fact, that morphine sulphate and

most of the other morphine salts contain a considerably large amount of other opium alkaloids. These by-alkaloids should be determined also, inasmuch as they are ether-soluble and may seriously interfere with the estimation of morphine in mixtures with other ether-soluble alkaloids such as atropine, etc. This can easily be done by the isobutyl alcohol-chloroform method, as has been shown by one of us a short time ago.—*(Deutsch-Amerikanische Apotheker Zeitung, Jan., 1913.)*

Analytical Laboratory Sharp & Dohme.

THE COMPOSITION AND ASSAY OF HEROIN HYDROCHLORIDE AND DIACETYL-MORPHINE HYDROCHLORIDE.*

R. T. HARRIS AND A. M. CLOVER.

Upon assaying certain preparations containing heroin hydrochloride, it was found that the amount of alkaloid was about 5% less than that supposed to be present, and upon going further into this matter it was shown that the direct assay of heroin hydrochloride, by the same method, gave a similar result. The method of assay was then tested upon the base, heroin, and upon diacetyl-morphine which had been purified by recrystallization and the result of these tests showed that the method was entirely reliable. Heroin hydrochloride is referred to in the literature in all cases which we could discover, as the anhydrous salt of diacetyl-morphine, this being the formula assigned to the product by its manufacturers. A like state of affairs exists in regard to the hydrochloride of diacetyl-morphine, but on the contrary we find that heroin hydrochloride contains 1 molecule of water. Two samples of diacetyl-morphine hydrochloride, obtained from different manufacturers, were found to have the same composition, while another sample from a third source consisted of the anhydrous salt. On account of the close scrutiny to which pharmaceutical products are frequently subjected nowadays it is well to clear up such confusion by careful experiments and to call attention to the existing facts.

Heroin Hydrochloride:—When heroin hydrochloride is heated at 100° there is a decided loss in weight. Quantitative experiments are difficult to carry out owing to the readiness with which the resulting product absorbs moisture from the atmosphere; however, the loss in weight is no more than that resulting from the loss of 1 molecule of water. The substance is not changed in any of its essential characteristics and dissolves completely in water after heating. When the heated product is allowed to stand in the air for a few hours its weight reverts to exactly the original value.

Ten grams of heroin hydrochloride were dissolved in about 150 cc. water and precipitated carefully with diluted ammonia, until a slight excess of the latter had been used. The crystalline precipitate was filtered upon a Büchner funnel, washed free from ammonium chloride and dried. The combined filtrate was shaken out twice with a little chloroform and the latter solution evaporated until the solvent had been completely removed. The crystalline precipitate amounted

* Read at Scientific Section, Detroit.

to 8.4 grams to which is to be added .1 gm. extracted with chloroform. The theoretical amount required for the anhydrous salt is 9.10 gms.

The above experiment was repeated with another sample of heroin hydrochloride which melted at 225-230° (uncor.). From 10 grams there were obtained 8.55 grams of heroin which melted at 169°-170° (uncor.) and .15 grams were extracted with chloroform.

Five grams of heroin melting at 169°-171° (uncor.) were dissolved in dilute hydrochloric acid, just enough acid being used to effect solution, the volume being about 125 cc. The solution was then precipitated carefully with ammonia and the precipitate and extract obtained exactly as from the hydrochloride. The dry precipitate amounted to 4.88 gms. while the extract yielded .1 gm. additional. There had been practically no loss.

1.53 gms. heroin were treated on a watch-glass with about .4 cc. of concentrated hydrochloric acid and stirred quickly. The heroin goes into solution completely and this is soon followed by a separation of the hydrochloride. The product was placed in vacuum to remove water and a slight excess of hydrochloric acid. When dry, it was pulverized and again placed in vacuum until a constant weight had been shown which was 1.77 gms. This is slightly in excess of that required for a hydrochloride containing 1 molecule of water.

Diacetyl-Morphine Hydrochloride:—This substance was prepared by the action of acetic anhydride on morphine and was purified by repeated crystallization from benzol until there was no further change in the melting-point which was 170°-171° (uncor.).

Eight grams of pure diacetyl-morphine were dissolved in a slight excess of dilute hydrochloric acid, and then precipitated with ammonia in the same manner as has already been described under heroin hydrochloride. The dried precipitate amounted to 7.88 grams.

A quantity of pure diacetyl-morphine was dissolved in about seven times its weight of dry benzol and treated with the calculated quantity of a saturated solution of hydrochloric acid in absolute alcohol. After standing one-half hour a large proportion of anhydrous diacetyl-morphine hydrochloride crystallized out. The crystals were filtered upon a Büchner funnel, washed with water-free benzol and dried. They melted at 131°-135°, which is considerably higher than the melting-point of heroin hydrochloride. This product did not show any loss in weight when it was heated at 100°. It lay in the air for several days without change in weight, but when a portion of it was powdered, there was a small increase of weight during the first twenty-four hours, followed by a rapid absorption of water sufficient in amount to correspond to one molecule. Nine grams of this salt were precipitated with ammonia in the usual manner and there were obtained 8.02 grams of precipitate and .11 grams of extract. The theoretical amount required for the anhydrous salt is 8.19 grams.

One and five-tenths grams pure diacetyl-morphine were treated on a watch-glass with a slight excess of 15% hydrochloric acid. The resulting product was freed from water in vacuum, powdered with a glass rod and then again placed in vacuum until a constant weight was obtained. The increase in weight was .2216 grams, while the monohydrated salt requires theoretically an increase of .2220

grams. The salt produced in this manner melts lower than the anhydrous salt and also lower than heroin hydrochloride. 218°-224° (uncor.).

Three samples of commercial diacetyl-morphine hydrochloride obtained from different manufacturers were examined. (1) The sample melted at 230°-238° (uncor.). Ten grams gave 8.91 grams of precipitated alkaloid and .11 grams extracted. 9.02 grams were recovered while the theoretical for the anhydrous salt is 9.10 grams. The product was therefore the anhydrous salt. (2) The sample melted at 224°-228° (uncor.). From 10 grams there were obtained 8.6 grams of precipitate and .12 grams of extract. The product is therefore the monohydrated salt. (3) The sample melted at 225°-230° (uncor.) and showed a decided loss in weight when treated at 100°. It is therefore the monohydrated salt.

Since the completion of these experiments our attention has been called to a statement by Schaefer (*American Journal of Pharmacy*, 82, 220), that only the monohydrated salt can be found on the market. He found that this salt when dehydrated, regains its water quickly from the air, but we have shown that this is not true of the anhydrous salt which separates from solution.

Assay:—Heroin or diacetyl-morphine may be accurately estimated by dissolving in excess of 1/10 normal hydrochloric acid and titrating the excess of acid with 1/50 normal sodium hydroxide using cochineal as an indicator.

	Weighed Sample.	Found.	Found Per Cent.
Pure diacetyl-morphine	.1362 grams	.1354	99.42
	.1735 grams	.1725	99.44
Heroin	.1323 grams	.1317	99.53
	.1336 grams	.1328	99.41

For the estimation of the alkaloid in its salts the following method is recommended:—An amount of the preparation representing at least one-tenth gram of the alkaloid and contained in 10 cc. of solution is treated with 20 cc. chloroform and sufficient 10 *per cent.* ammonia to render it slightly alkaline. After shaking vigorously, the chloroform is drawn off into a container suitable for titrating. The extraction with chloroform is repeated three times, after which the combined chloroform extract is evaporated. Add 5 cc. of 1/10 normal hydrochloric acid or sufficient to completely dissolve the alkaloidal residue then add a few drops of cochineal solution and titrate the excess of acid with 1/50 normal sodium hydroxide. The results obtained are very close to the theoretical.

Scientific Laboratory of Parke, Davis & Co.

THE GLANDS OF INTERNAL SECRETION AND THEIR IMPORTANCE AS THERAPEUTIC AGENTS.

CAREY PRATT MCCORD.

The animal body, it appears, manufactures its own drugs. These drugs are the derivatives of the glands of internal secretion. These substances elaborated by the secretory cells of these glands are discharged into the circulation and carried to the various parts of the body. There they react upon the tissues in a manner for the well-being of the body as a whole.

The glands of internal secretion regulate and correlate some of the body's most important physiologic functions and constitute efficient protective and defensive measures against disease. There are, influenced by the glands of internal secretion, such functions as ovulation, pregnancy, muscle tonus, vaso tonus, secondary sexual development, adiposity, skeletal growth, sugar metabolism—on through an extended list. Despite the complexity and intricacy of these manifold manifestations of internal secretory activity the balance is maintained, in health, —in perfect harmony,—that is, the glands regulate and control each other. This interrelation, and interdependence of the glands of internal secretion have given rise to the term "internal secretory balance." Although these several glands are situated in the body widely apart from each other and have no visible connections one with the other, they constitute a unified system of glands, every individual of which having its function or functions, but contributing to the maintenance of a complex interrelation within the entire system. It is now established that there exists not only an organic and functional harmony between all glands but a compensatory interaction as well. Every gland acts, in its peculiar functional manner, upon the blood passing through its tissues, often adding to it bodies of vital importance to the welfare of the individual. If any organic disease or abnormality exists in a particular gland, the missing or altered function appears in some cases to be taken over by some other gland, and disaster is prevented. In other cases the altered metabolism of one gland upsets the normal metabolism of all the others and leads to its impairment and the impairment of the body as a whole. In its deepest significance, it is probable that every cell in the body is a potential ductless gland and has some slight influence on the life and functions of its fellow cells. The terms "ductless gland," "gland of internal secretion" and "endocrinous gland," are, however, restricted to these organs showing glandular tissue and yet having no ducts for discharging the formulated substances.

The tissues producing internal secretions are, pituitary, pineal, thyroid, thymus, parathyroid, pancreas, adrenal, ovaries, testes. There are, in addition, some indications of internal secretion from the tonsils, placenta, and carotid gland.

Glands of Internal Secretion and Disease:—While the ductless glands functionate for the maintenance of the normality of the body, they themselves are subject to disease and traumatism. In many instances, apparently as a prevention against traumatism, the ductless glands are so located that the very shielded and privileged situation of these organs suggests a vital importance. The pituitary gland resting in the saddle of the *sella turcica* of the sphenoid bone at the center of the skull is the best protected organ of the body. Scarcely less protected is the pineal gland near the center of the brain, the parathyroids embedded in and behind the thyroid gland deep in the neck, or the adrenals padded in the fat above the kidney. The removal of the glands experimentally, by accident, or through necessary operative procedures, manifests the absence of the gland by distressing and even fatal symptoms. The removal of the adrenals, for example, leads rapidly to the death of the animal or patient with great prostration and depletion before death due to the loss of the adrenal function of maintaining muscle and vascular tonus. The removal of the parathyroids leads to death from the accumulation of toxic bodies in the circulation, the destroying of which is

the parathyroid's function. The removal of the pancreas leads to diabetes and later to death. Not all glands, however, are immediately essential to life. In adult life the testes, ovaries or pineal gland may be removed without producing any fatal results.

It is not necessary that there be a visible anatomical destruction of the ductless gland to produce a perversion of its secretion and thus a disturbance of the body's equilibrium. They are subject to tuberculosis, to cancer, to infectious diseases, that may lead to a slight or grave impairment, which may manifest itself as an increased or a decreased function. Increased function of the pituitary gland leads to gigantism, acromegaly, while decreased function produces obesity. Increased function of the thyroid causes goitre, while decreased function causes the coarse featured obese cases called "myxoedema," and in young children is termed "cretinism." Even so mild a condition as the so-called "spring fever" may be a condition of decreased adrenal function. All considered, it is very evident that malfunction of these glands may produce very severe pathological states of the body, and it becomes a pertinent matter to inquire as to the efficacy of treating such conditions with preparations of glands derived from cattle, sheep or other animals.

Ductless Glands as Therapeutic Agents:—The conception of using animal derivatives in treatment is by no means new. As early as 6000 B. C. preparations from testes were given in the treatment of obesity. At about the same time there are also mentioned the use of such other animal substances as "swine's fat, dog's dung, fat of a serpent, hair of a virgin goat, and human bone." It is only a step from this, to our present-day desiccated *corpus luteum* and pituitary extracts. It is, however, a far cry from the ancient to the modern point of view regarding such substances. The ancients used these agents, calculating that their vile tastes and nasty odors would drive away the offending disease, while, by us, organ derivatives are employed from our knowing that chemical substances are elaborated and stored by the organs and when given off into the circulation promote the welfare of the body organism. This rational use of glandular derivatives is only 25 years old, but, in these comparatively few elapsing years, a vast amount of work has been performed by scientific workers everywhere, until to-day we are confronted by a bewildering literature filled with contradictions, over-exploitations, speculations and theories, but, fortunately, here and there we find a clear-cut, undoubted fact that stands as a monument of human achievement.

Unrestrained speculation from the very incipiency of organo-therapy has attached stigma to this form of treatment. There has always been the over-optimistic type of worker who has held out greater virtues, as the properties of certain glands, than really existed as facts. Extravagant claims have actually retarded the fuller understanding of the possibilities and limitations of glandular therapy. So, let us recognize that we are surrounded both by existing limitations and by ignorance as to possibilities. Let us at once learn not to expect any panacea that will rejuvenate old men, or which will defer old age beyond a certain physiologic limit, nor can hopelessly anatomically defective minds be brought up to par. On the other hand, nearly every gland has its field of application. In many cases, the application is specific, and neglect to use glandular tissue approaches criminality. Persistence in the treatment on the part of the

physician is essential. Most of the glands, apart from such products as adrenalin and pituitrin, act so as to alter the metabolism. Such changes do not occur at once. For instance, no good results are to be expected from placing a mentally defective child on pineal medication for two weeks. Such treatment must be continued for months and even years.

One of the sources of error accountable for poor results may be ascribed to the chemical manipulation of glandular substances, with the desire to purify them and ultimately to obtain the active constituent in crystalline form. A chemically pure substance, active and freed from attending deleterious qualities due to contamination, is, of course, very desirable, but many glandular products are not standardizable and a mechanically nice-appearing product may be attained at a sacrifice of activity. Except in a few instances, adherence to a product closely simulating the original tissue, is attended with better results, in the absence of any direct data regarding the nature of the substance stimulating the changes. This is especially true of such obtuse agents as the anterior lobe of the pituitary gland and the pineal body.

Very few of the hormones have been isolated in crystalline form, so that, for the most part, the properties of these hormones of the different glands are but meagerly understood. In general, they are the chemical means of correlation of the activities of the different parts of the body. They promote or moderate metabolism. In addition, special functions are attributed to some. Even with so vague a knowledge of the nature and properties of hormones, it is possible to indicate some lines on which with safety we may proceed in the application of these glandular derivatives. They are likely to prove useful in five different ways:

1. The most obvious and natural use is in the treatment of the diseases due to destructive lesions of the glands by which the hormones are secreted. In this substitution treatment glandular derivatives are used in a sound and rational manner. Typical of this use is the employment of *corpus luteum* or ovarian extract in the treatment of artificial menopause due to the removal of the ovaries.

2. Glandular derivatives are serviceable when there is bodily demand for more secretion than the gland supplies. For example, the simple parenchymatous goitre of young women is due to overgrowth of the gland in its effort to supply a greater amount of the thyroid secretion. When such patients are placed upon thyroid medication, these simple goitres in many cases disappear.

3. The derivatives of one gland may be substituted in a deficiency of activity in another gland. For example, where osteomalacia is present and attributable to ovarian malfunction adrenalin preparations are many times useful.

4. A large number of conditions exist where glandular products are beneficial but no connection is established between the pathologic condition and the gland function. Such may be called the "empiric use" of glandular derivatives.

5. The use of these glandular derivatives as drugs, for example pituitary extracts as an oxytocic, or adrenalin as a hemostatic.

In the foregoing pages I have tried to make clear the importance of the glands of internal secretion in health and normal function, the possibility of disaster that may come to the body through perversion of secretory function from disease or traumatism and, in the last paragraph above, it has been my desire to point

out the rationality of combating disease and aiding normal functions by the administration of preparations of these glands. Since the cells of the various organs may be influenced in their functioning by substances procured from other animals, the possibilities at once opened up are immense. Progress to the ultimate control of many complicated conditions, is limited only by the capabilities of the scientific workers to produce satisfactory preparations of established and uniform activity.

This is an all too brief outline of hormone therapy to-day. New pathways in this field of therapy are opening up yearly. The principles of hormone therapy explains in many respects the action of the older drugs and affords solid groundwork for future methods of treatment. For these reasons I commend the glands of internal secretion to your further interest and study.

VOLATILE AND ODOROUS CONSTITUENTS OF HUMAN URINE.

At ordinary temperatures the amount of volatile acids in urine is very small, and the characteristic odor is not due to them, as has been stated. The lower fatty acids occur in such minute traces in normal urine, and are present in salts or in combination, so that they can only slightly, if at all, modify the odor. Sulphuretted hydrogen is given off by all urines, in the cold, when they are treated with dilute phosphoric or sulphuric acid. The volatile substances were obtained by acidifying a large volume of urine with sulphuric acid before distillation. Benzoic acid, derived from the hydrolysis of hippuric acid, was the principal volatile acid found, although in many cases the hydrogen sulphide present was sufficient to account for the total acidity. Fatty acids up to heptylic acid, and possibly hexahydrobenzoic acid, were also present in minute quantity. Phenol and paracresol were present, also notable quantities of higher phenols. Methylamine and indole occur in traces in fresh urine; the amount of these bases increases on fermentation. None of these are responsible for the characteristic odor of urine. This is due to a neutral substance, urinod. It was obtained by acidifying 1,000 litres of urine with sulphuric acid, allowing it to stand for several days, distilling, shaking out the distillate with ether, and removing the acids, phenols, and bases from the ether extract by the usual methods. The residue was then distilled, the distillate again shaken out with ether, the ether extract being shaken with mercury to remove sulphur. The purified ether residue was then fractionated *in vacuo*. Urinod was thus obtained as a yellow oil, slightly heavier than water, in which it is insoluble, with a very persistent, penetrating odor of urine. A drop on a filter paper retained its odor for fifteen months. Its empirical formula is C_6H_8O: boiling point, 108° C. under 28 mm., or 208° C. under normal pressure; but it does not distil under ordinary pressure without decomposition. It is very volatile in aqueous vapor. Urinod is extremely poisonous; its relation to metabolism is not known. It may have some influence as a cause of uræmia. Oxidising agents at once destroy it; hence these are best for use for deodorizing urinals.—W. M. Dehn and F. A. Hartmann (*J. Amer. Chem. Soc.*, 1914, 36, 2,118, 2,136).

Section on Commercial Interests

Papers Presented at the Sixty-Second Annual Convention

THE SALE OF BIOLOGICALS.

WALDO M. BOWMAN.

"The present is the perpetually moving spot where history ends and prophecy begins. It is our only possession; the past we reach through lapsing memory, halting recollection, hearsay and belief; we pierce the future by wistful faith or anxious hope, but the present is based on fact."

So says a modern writer and we do not gainsay him truth, yet we build to-day with hope for to-morrow. The past is past—What of the future?—What of to-day?

It was 118 years ago that the practice of vaccination against Small-pox was introduced and some twenty years ago that Anti-Diphtheritic Serum was first marketed, but it is during the last decade that the greatest advances in Serum Therapy have been made, and our Biological Materia Medica has been so greatly enlarged by the various Serums, Bacterial Vaccines, Phylacogens and Sensitized Vaccines that are coming to play such an important part in the practice of medicines that when the physician of to-day is called upon to prescribe for his patient his mind turns in many instances to Biological Materia Medica for the remedy.

This being so, it behooves the pharmacist to be thoroughly informed, not only as to the different biological products, their distinguishing points, methods of production, usage in the treatment and prophylaxis of disease, but the methods of best preserving them in active condition and commercially of the most effective ways of bringing them to the attention of the physicians and the public.

That comparatively few pharmacists are keeping up to date on this rapidly changing line is an admitted fact, and failing to be posted they are naturally unable to take care of the demand that may be made on them for biological materials. The elaborate and expensive plants and complex methods necessary to the production of Serums and the modern Bacterial Vaccines makes it obligatory for the manufacturer to depend for distribution, and the physician and public for supplies on the dispensing pharmacist or other local source of supply, we should therefore be prepared to meet the demand for this class of material which affords a good margin of profit and for which the user naturally looks to the pharmacist.

Let us briefly mention the various Biologicals with their distinguishing points. Diphtheria Antitoxin is the only one at present official in the Pharmacopœia. Its method of production is fairly well understood. In the twenty years that it has been in use, the mortality from Diphtheria has been greatly reduced, danger of epidemic lessened and to-day its use is the first thought in this disease, and Diphtheria has ceased to be the universally dreaded scourge it was. Tetanus

Antitoxin and the Anti-Bacterial Serums, Anti-Streptococcic, Anti-Pneumococcic, Anti Meningitis, Anti-Dysenteric, Anti-Anthrax are all produced in a manner similar to Diphtheria Antitoxin by developing in horses by repeated injection of either a toxin or bacterial culture a high degree of immunity, the blood serum from these animals after purification representing the marketed product. Normal Serum, the purified serum from the blood of healthy horses is used in the treatment of Hemophilla and has quite an extensive sale.

Small-pox Vaccine marketed in capillary tubes and glass or ivory points is the original Biological; its method of production is doubtless familiar to all of us, and commercially this product is of considerable interest.

Bacterial Vaccines are the product of Bacterial cultures on a suitable media, they representing commercially either the solution of the product of a specific organism, or of several combined varieties, their medicinal value lying in their property of raising the resistance power in the body to infection; that is to stimulate the Phagocytes that nature provides for fighting infection. The principal commercial varieties are Acne, Coli, Diphtheria (for immunity), Neisser (Gonococcic) Pneumo, Staphylococcic, Streptococcic, Typho and various combinations of these forms.

Phylacogens are "Sterile aqueous solutions of substances generated by bacteria grown in artificial media," they are, substantially, mixed bacterial vaccines, those bearing a specific name showing a preponderance of the named organism, the principal varieties are Mixed Infection, Gonorrhoea, Rheumatism, Pneumonia. Their use medicinally is similar to that of Bacterial Vaccines, they following Shaeffer's theory that in all infection, the growth of all forms of pathogenic organism is stimulated and to successfully combat disease all forms of infection must be combated.

Sensitized Bacterins, marketed as Serobacterins, are prepared after the method of Besredka, by bringing live bacterial cultures on artificial media, into contact with the blood serum of an animal which has been previously rendered immune to the specific infection; that is, one whose blood has been heavily charged with antibodies, a precipitate is formed which is freed from adhering serum, purified and killed mechanically, an aqueous mixture with suitable preservative representing the commercial product. They are used medicinally in the same way as Bacterial Vaccines and Phylacogens; the claim being made that they produce quicker and more lasting immunity with less reaction, the marketed forms are practically same as the Bacterial Vaccines. Tuberculins, for diagnostic and therapeutic use, are produced from cultures of the Tubercular Bacillus. They are marketed in various forms both concentrated and dilute and are largely used by a limited number of physicians.

Various cultures of the Bacillus Bulgaricus both in liquid and dry form are becoming important commercial products; following the theory of Metchinkoff of Paris they are used in the treatment of various conditions due to intestinal infection, cultures are also marketed for the production of buttermilk, the use of which is along the same lines.

That it is manifestly impossible for the pharmacist to carry in stock all of these items is evident, but the well-regulated stock should include in addition to Diphtheria Antitoxin and Small-pox Vaccine, Normal Serum, Anti-Streptococcic

Serum, Tetanus Antitoxin, Anti-Meningitis and Anti-Pneumococcic Serums and an assortment of Phylacogens or Bacterial Vaccines, including Acne, Gonococcic, Streptococcic, Staphylococcic Typhoid, both treatment and immunizing, and Mixed Staphylo Bacterin, the quantity to be carried must necessarily vary in different localities and should be regulated by the volume of business (that is, the number of people you might normally be called on to serve), and the distance from a dependable source of supply. It should be sufficient to care for a reasonable demand and where the source of supply is so situated that fresh stock can be obtained within twenty-four hours a representative stock might include in Diphtheria Antitoxin six packages of One Thousand Units, and two each of 3000, 5000 and 10,000. Twenty vaccinations against Small-pox and double this amount of all except the 1000 Unit Diphtheria Antitoxin should the source of supply be more distant.

Of Anti-Streptococcic Serum and Tetanus Antitoxin, six curative packages each should be carried. For in treating severe cases one package is used every six hours; two immunizing packages of these should be carried as well. A smaller amount of other Serums will suffice as will of the Bacterial Vaccines in which it is advisable to carry in stock the larger packages. After you learn your trade and have established a demand for these preparations, a little care and observance will enable you to keep the stock in good condition, but do not overstock vaccines, as in many instances the sale of a single package is all you may expect for a case under treatment. The manufacturers, in most instances, provide for exchange of unsalable stock, but with this material it is very easy to tie up an unnecessary amount of capital.

As to the best methods of preserving, the manufacturers of the various Serums and Vaccines have given a great deal of time to experiments along this line, the results of which show in what manner they may be best preserved,—that is, their activity retained for the longest period.—They should be kept in the dark, this is easily done as they are marketed in light-proof packages. These packages, also, in most cases, bear a date after which time they should be no longer sold. They should be kept at an even temperature preferably at 40° F. or thereabout, it having been shown conclusively that the rate of deterioration of Serums stored at this temperature for a considerable time is 16% as compared with from 30 to 40% at the ordinary room temperature, while the deterioration of Small-pox Vaccine is much more rapid, in warm weather, it often losing its efficiency in a few days, while if kept at a low temperature its activity is retained and at 10° F. it may be kept for a long period.

The rate of deterioration of Bacterial Vaccines and Phylacogens is still somewhat questionable and there is no doubt but that they retain their activity longer if kept cold. Temperature being such an important factor, it is advisable that all biologicals be stored in a refrigerator so constructed that the packages may be kept cold, dry and sightly and at the same time be readily accessible. One constructed entirely of metal or porcelain, is preferable and if properly arranged will keep your stock in good condition and may be made a valuable advertising asset; and also of use in storing other preparations liable to rapid deterioration such as Ergot and Digitalis preparations, Culture Media, etc. Personally, I have found a refrigerator of this kind a most valuable addition to store equipment.

Now, having a stock of Biologicals and providing for their being well stored, the question of sale is of paramount importance; during the first few years that Diphtheria Antitoxin was on the market, the use of it was confined principally to the specialists in diseases of the throat. Among the medical profession to-day its use is well nigh universal; all schools and classes of physicians resorting to its use when the opportunity presents itself. The newer Biologicals have been used until lately by comparatively few physicians, but the opportunity for business to-day, and in the future, lies through those physicians in general practice whose investigation along Biological lines is comparatively limited. These men are possible good friends of your pharmacy, their patients are your good customers and will turn to you for supplies. Be prepared when the opportunity comes to talk Biologicals to these men, study the literature on the subject that may be easily obtained from the manufacturers; read carefully the various articles that appear in the trade journals from time to time along this line and if the opportunity presents itself visit one of the larger Biological Laboratories where you can get the information at first hand, *get this information* so that when the opportunity comes to make use of it, you will not have to say "Well, I don't know much about that, but maybe I can find out," but will be able to identify the particular Biological that is needed for the case in question. Remember that the psychological factor in making a sale is an important one and that you must know the value of your merchandise before you can impress its value on another. I hear someone say, "We are not practicing medicine for the physicians, let them do that for themselves; we're in business to supply what is called for, not to tell what is wanted." Quite true, but neither are you practicing pharmacy for yourself unless you are thoroughly familiar with the composition and therapeutic value of the medicines and agents that are used to-day, and if your interests are Pharmaceutical rather than purely commercial, you will be up to the times. If not, you will be distanced by some more energetic fellow who has kept up-to-date and is willing to impart his knowledge when the opportunity is at hand.

Advertise Biologicals to the Medical Profession, informing them that you are carrying a complete assortment, stored under proper conditions, and that you know their therapeutic use. Advertise them too, to the public, for with the very considerable amount of publicity that has been given to Bacterial and Serum treatment of various kinds for the last two years in magazines and the daily press, the better read people have a more or less defined knowledge of Biologicals in the treatment of disease and will be attracted by your advertising a line of medicines that they know are coming into more extensive use continually.

Personally, I have used street car advertising with marked success, running for some time a card calling attention to my installation of a special refrigerator where biological products were stored under ideal conditions; asking inspection of it, and saying that these products were supplied only on physician's orders. Also a card on Anti-Typhoid inoculation for the production of immunity against Typhoid Fever at a time when this disease was prevalent. Use methods of this kind or well-worded newspaper advertising, coupled with window displays of dummy packages and display of attractive placards. Your good friend the "general public" is very amenable to suggestion, if it be timely and about something that is of interest; so advertise Vaccine when Small-pox is an epidemic. Typhoid

Vaccine when this disease is prevalent, Diphtheria Antitoxin at appropriate seasons and Tetanus Antitoxin before the Fourth of July.

The margin of profit is good and people will respond, your physician will benefit as much as you and if your advertising is dignified you can not be accused of overstepping the bounds of proper publicity.

When the demand comes to your establishment, see that you are there to take care of it or have some one who is equally well informed, don't let the junior do it all; but be awake when opportunity comes your way, for we are told that "she knocks but once at every door."

As to Autogenous Vaccines, that is, Bacterial Vaccines prepared from cultures of individual cases for the treatment of such cases, on account of the apparatus and time necessary for their production, these cannot be undertaken by the pharmacist with any degree of success, except in rare instances, but an arrangement with the larger manufacturers is available which will enable you to take care of any demand that you may have. Rabies treatments may also be taken care of in this way, and while these items do not afford a large percentage of profit, they are handled on a cash basis and you have no investment to make.

So far, we have considered only the Biologicals used in human practice. In the veterinary line there is a fertile field for those stores which are so situated that they are able to get in touch with the veterinary and farmer trade and to obtain business along veterinary lines, for a profitable trade can be readily established. They use Biologicals largely and the present indication seems to be that the horse is far from being displaced by the motor, while the demand for dairy biologicals continues to increase.

Tetanus Antitoxin in veterinary practice is highly successful and the use of immunizing doses of Tetanus Antitoxin is a routine procedure with the better veterinarians in all surgical cases. Anti-Streptococcic Serum has a very considerable demand, as has Veterinary Diphtheria Antitoxin. Among the Bacterial Vaccines, Mixed Bacterins of Polyvalent type, Pneumococcic, Streptococcic Bacterins and Anthrax and Abortive Vaccines and the various Veterinary Phylacogens are considerably used, while the demand for Tuberculin and Mallein is steady.

In point of quantity, Hog Cholera Serum is the largest item among Biological preparations, the amount used in some sections being enormous.

These items can be advertised to farmers and veterinarians and a very profitable business be secured with little effort where proper conditions exist.

Summing up the whole matter—If you are not developing the business in your territory along Biological lines you are neglecting a great opportunity for profitable trade.

Their use has shortened the duration of many diseases and practically eliminated others. It has decreased the need for ordinary medication to a marked degree and so curtailed your profits to some extent. What the development along these lines will be in the next decade we hesitate to predict, certainly there will be great advances and great developments. Be well informed and get the business in your field while it is developing, and keep in mind that saying "He who knows and knows that he knows is a wise man."

DISCUSSION.

Chairman Mason said that it had been his contention for a number of years that the future of the druggist was right along this line of biological products; that the materia medica is going to diminish in importance, and the future is in the direction of biological products. Chairman Mason said further that he was afraid that the American druggists have not appreciated this fact, and for that reason he had solicited these two papers on the subject, hoping that the authors would act somewhat as missionaries. The Chairman said if there were any others present who could give their experience in the sale of biological products, he would be delighted to have them do so.

Mr. Cornelius Osseward, of Seattle, said it had been his experience that biologics were getting less attention from the druggists than any other line that has recently been put in the drug-stores. He spoke of that because of the number of clerks he had recently employed, it had been his experience that everyone of them came to his store knowing nothing whatsoever about biological products, and the result was that he himself had to be "on the job" all the time, unless he got a man who would take enough interest in the subject to take it up and study it. It did not take much time for a man to become posted on the subject. It was a good line, and there was a good profit in it, and the druggist could get as much as forty per cent. plus his cash discount on the goods, and he did not see why the druggists do not take up that line more than they do. In his case he was somewhat at a disadvantage in that he was so far away from the eastern markets that he had to carry an immense stock, which made it necessary for him to have between twenty-five hundred and three thousand dollars invested in biologics. The reason for this was because the physicians insisted on goods made by different manufacturers, and this required carrying, sometimes as many as five different makes. This is a hardship, and it meant the investment of a lot of money that really was not necessary, with druggists who were close to the market. Where there was but one man in the city who handled biologics, he did not need to have more than one line because he was independent. In his case, there were five or six other druggists who handled biologics to some extent, which made it necessary for him to carry most of the makes which were on the market, which was the only disadvantage he claimed for carrying biologics in his vicinity.

Mr. Selzer said he used to handle serums, but, because the city now distributed it free, to rich or poor alike, as well as vaccine virus, he had discontinued doing so.

Mr. Holzhauer said, the Board of Health in his city, supplies biological products to rich and poor alike, and the Board has stations for their distribution in various drug-stores throughout the city. This was true of all the biological products with the exception of a few which are not in common use. The Board of Health had charge of the whole thing and the druggists simply acted as distributing agents.

Chairman Mason asked Mr. Holzhauer what the druggist got out of it, to which question Mr. Holzhauer replied that they got nothing, except glory. (Laughter.)

Chairman Mason then asked Dr. Charles T. P. Fennel, of Cincinnati, to explain why it is that any city Board of Health distributes free antitoxin to any one except the indigent.

Dr. Fennel replied that he was just going to say that the same conditions existed in Cincinnati with their Board of Health, and they had the additional misfortune of having a surgical instrument house in their city which catered to the medical profession, and offered them a twenty per cent. discount on their goods, with the result that the druggists who carried a line of surgical instruments, were placed at a disadvantage, and only had calls for these articles in the night time when the Board of Health and the surgical instrument house were closed, and consequently there was no profit in these lines in Cincinnati.

Mr. Holzhauer said, originally, in his city, the Board of Health provided antitoxin only for the poor, and the way the change was brought about to provide it to the people who were not poor, was by a gentleman coming into his store one night who had a child sick with diphtheria. In this case the culture had been sent to the Board of Health Station, and the report made that it was a case of true diphtheria. The gentleman on getting this report, wanted a bottle of antitoxin, but was told he could not have it as he was not poor. Mr. Holzhauer said he saw the ridiculousness of the position and he went to the Board of Health about it. As a result of this incident the Board of Health started their own department and developed along the line he had indicated.

Mr. E. H. Thiesing, of Cincinnati, said he would like to call attention to a few interesting situations which had existed in Cincinnati some years ago in regard to this very product; that the druggists woke up to the fact that they were selling no antitoxin at all; that the local association then took the matter up and after some investigation it was discovered that two firms in the city were delivering antitoxin to the physicians at the same prices that the druggists were paying for it, with a two per cent. discount; that the druggists finally decided to make an effort to have antitoxin of their own brand, and they got in touch with the Board of Health, and with their coöperation, the local association has made an arrangement with the Memorial Institute of Chicago, he believed, by which the druggists are now selling antitoxin in quantities of five thousand units for $2.25 to the public, against the former retail price of $7.50; that the association had in this way brought back to the druggists about eighty-five per cent. of the trade in antitoxin, whereas previous to the druggists making this arrangement, the sale was in the hands of two firms in the city.

Mr. Thiesing said he mentioned this because it might be advantageous to do this in other places. The antitoxin is now handled in his city through the local association, and is also being supplied to some small towns outside of the city, and they can sell it at this same price. He thought 3,000 units were sold at $1.50, and 1,000 at eighty cents. The arrangement had been quite an advantage to the public, and had brought back to the druggists the sale of the antitoxin, which they had not had for a little while. The arrangement had been brought about only through coöperation with the Board of Health, and each package of the goods was marked with the approval and consent of the Cincinnati Board of Health.

Mr. Holzhauer said they had at his store arrangements to receive diphtheria slides which went to the Board of Health, and in twenty-four hours the physician knew whether he had a case of diphtheria or not. Otherwise, the physician went on treating his case two or three or four days before he absolutely made up his mind whether he had a case of diphtheria. This was true with other diseases all the way down to tuberculosis. In a suspected case of tuberculosis, the sputum cup is used, and the sputum is examined, and in twenty-four hours the physician knew whether he had a case of tuberculosis.

He never liked to turn his back on anything that provided profit for the druggist, but it did seem to him that it was a case of doing the greatest good to the greatest number, and with the Board of Health managing this thing he thought it was a great deal better for the patients who were suffering from these diseases to have it under such control, rather than to have a physician "fool" along for a week before he made up his mind whether he had a case of typhoid fever, for example. As it was now, the physician knew inside of twenty-four hours, and it seemed to him, while he received less profit, still it was a great benefit to the community at large.

Mr. Selzer said in his city all the police stations furnished antitoxin, and the physician did not have to go down street to get it; that the police stations supplied it, and the physician did not have to tell what it was for.

Chairman Mason called on Mr. Leonard Seltzer, of Detroit, for some comments on this subject. Mr. Seltzer said he had not been able to determine how far the sale of biological products had been interfered with by the distribution of such products by the Boards of Health. The sale of such products has been somewhat interfered with, but he had not seen much interference, so far as antitoxin was concerned. He did not know, of course, how much he did not sell, but simply how much he sold. So far as the sale of biological products was concerned, it seemed to be only a good means of pulling other business. It was a good plan, in order to keep in touch with the physicians, to have a full line of biological products, and keep them in good condition.

Mr. Holzhauer asked Mr. Selzer how much he lost by deterioration? Mr. Selzer replied, he had never figured it out, but he did not remember of having lost a single package of antitoxin, although once in a while he had lost some of the others.

Mr. Bowman thought they were losing sight of one very important thing in this discussion; that the thing to do was to make the public believe that your own store keeps biological products in better shape than any one else in town. A certain number of people in every community knew who had the best goods, and they will come to you because they know your goods are all right, and you know what you are doing, and they do not know what kind of goods this Board of Health "stuff" is, particularly with the newer biologics. The druggist should put himself in such shape before the public that when they need any of these things, he will be the first man to come into their mind, and they will go to his store and buy them. It was good advertising to the public and that was the one great point in the sale of biological products.

Mr. Osseward agreed heartily with the last speaker, and said that the pharmacist should so conduct his store that the public would come to him. He further said that he had an incubator in his store, which the physicians use. They put their cultures in this incubator when they want to find out the nature of an infection, and, in the case of diphtheria, after the physician has left his culture, he comes back to the store and gets his culture before he goes to the patient. The physician makes his test, and the culture incubates in the store, and the next morning the authorities come around to the store and inspect the culture, and the physician gets the report and comes to his store, because there is where the culture was incubated. The incubator was one of the best investments he had ever made, it had cost him a hundred dollars, although you can get a small one for fifty dollars. It was because he had this incubator, that when the physician got his antitoxin, or his biologics, he came to him, as their store had the reputation of having everything that is on the market in the way of biological products.

Chairman Mason said he thought they had perhaps given sufficient time to this subject, and he simply wanted to say in concluding the discussion that both Mr. Bowman and Mr. Osseward of Seattle have made a brilliant success in the sale of biologic products, and that they have shown what can be done by giving some study and attention to the subject.

BUILDING UP TRADE IN SPRAYING MATERIALS.

H. F. RUHL, MANHEIM, PA.

The use of insecticides and fungicides is greatly increasing, not only in fruit growing but also in general farm practice. Wheat and other grains need to be treated (before seeding) with Formaldehyde solution to prevent smut. Wheat is treated in the granary or grain elevator with Carbon Disulphide to prevent a sort of a "miller" which destroys much wheat. Potatoes are soaked, before planting, in Formaldehyde or Mercuric Chloride solution to prevent scab. Potato vines are sprayed with Bordeaux Mixture to prevent blight, and with an Arsenate like Paris Green or Lead Arsenate to kill potato "bugs." The list might be lengthened, but even this short list shows the advantage of being prepared to supply a need that is bound to grow.

The essential requisite for building up a trade in this line is familiarity with the subject; knowledge of the necessary materials; strength of solutions; the right time of application. This knowledge may be acquired by reading Federal and State bulletins. In Pennsylvania, Volume 1, No. 1, of *The Bi-Monthly Zoological Bulletin* issued January, 1911, under the direction of Prof. H. A. Surface, covers the subject thoroughly. No doubt similar publications are issued in other states by the Experiment Station or Department of Agriculture. If possible, get into touch with County Farm Bureau Agents and successful fruit growers. If state officials give demonstrations in orchards, attend these.

One other essential is advertising. A pharmacist may be thoroughly familiar with the subject and have the necessary spraying materials and yet fail to do much business. By impressing upon possible customers the fact that he knows and has the goods, through the medium of advertising, will greatly increase his chances for success. The writer has used window displays in the fall by showing perfect specimens of apples with a placard "Plan to have fruit like this next year by spraying." No spray materials were shown. As the time for spring spraying approached spray materials were displayed. Newspaper space has also been used, giving directions for preparing solutions. After the edition of the paper was run off, the form was lifted out and placed in a smaller press and a quantity of counter slips run off. The wording of one of these slips was as follows:

FOR POTATO BLIGHT

Use Bordeaux mixture. Make stock solutions as follows:

Tie 25 pounds copper sulphate in a cloth bag and suspend just below the surface of 25 gallons of water.

In another vessel slake 25 pounds of lime and add enough water to make 25 gallons.

When ready to spray to make 50 gallons of mixture; take 5 gallons copper sulphate solution and enough water to make 45 gallons. Stir up lime mixture and strain 5 gallons of it into the 45 gallons above and it is ready for use. If bugs are present add two or three pounds of arsenate of lead and apply both at one spraying.

RUHL'S DRUG STORE,

Telephone 608 L. 51 S. Prussian Street, Manheim.

Such printed directions save the pharmacist time as no verbal directions need be given.

Most of the chemicals or drugs needed to supply this trade are carried in stock in nearly every pharmacy, hence there is no additional outlay. Only the fact that some of these, like sulphur and copper sulphate, are needed in large quantities makes it necessary to buy in larger quantities to get every possible price concession so as to be able to sell reasonably.

DISCUSSION ON THE ANNUAL INVENTORY.

Chairman Mason proposed as a topic for discussion the taking of an Annual Inventory.

MR. NITARDY:—"Our firm is a large one with a quarter of a million dollars of invested capital, divided into six stores, a supply department and a manufacturing-department. The inventory of all of these is taken in one day, each department looking after its own. The office supplies inventory-books, the pages of which are printed similar to an invoice. The pages of this book are torn out as filled and then they are bound in a large volume together. Thus we always have a definite sheet or series of sheets for each particular class of articles. Our inventory usually contains between fifty and sixty thousand separate items, that is for the main store, and this work is finished in a week's time."

MR. SCOTT, of Detroit:—"We take an annual inventory and we try not to exceed seven days in taking the inventory of our seven stores. We simplify the taking somewhat by listing the goods we make at a certain figure which figure they had found did not vary much from $10,000. This simplified the work and eliminated many objectionable features of it. The final figuring of the inventory is done by the office-force. The man who does not take an inventory does not know what he has in stock that is unsalable and which oftentimes can be exchanged for salable goods. An adding-machine we have found to be a very useful article in making an inventory. Much time can also be saved by massing certain things, such as, for instance, herbs. Taking an average price for such herbs, we find that we have one or two hundred pounds of herbs at a price of twenty-four cents a pound. This method saves detail. The same method can be adopted in the case of tinctures, elixirs and like goods."

The question being raised as to how depreciation of fixtures should be taken care of, Chairman Mason called on Mr. Barker to answer that question.

MR. BARKER:—"Soda fountains, carbonators and things of that nature depreciate about ten per cent. a year. Shelving and show cases about five per cent. Cash registers should be charged off at about ten per cent. It is well to allow a liberal depreciation on store fixtures, so that when changes have to be made they have already been allowed for."

In reply to a question Mr. Siebert stated:—

"I think it necessary, in the adjustment of fire-losses that the druggist should be able to state the actual cost of the articles for which he desires to receive compensation. To present an estimate of 'fluid extracts, so much' would not be acceptable to the present-day companies. That used to be the case, but companies have become much more particular regarding this. Many druggists do not take an inventory more than once in ten years and such men would find their case a difficult one if they had a fire in their establishments. The first thing asked for now by the companies is the inventory and if that is not forthcoming adjustments will be difficult. Annual inventories are absolutely necessary for prompt and satisfactory adjustment of losses.

MR. SHRINER:—"I have had a little experience with fire. The fire was caused by a person who had a position in my house, and as a result of it a garage burned down. The garage cost $5,000.00 and it was insured for $600.00 only. The fire insurance adjuster, who represented several companies, was a friend of mine, but when it came to adjusting the loss I found out that, friend or no friend, the adjuster wanted to know precisely about every item of loss. The insurance people looked the thing over and I was very much surprised at the system which they used in trying to make an adjustment to the satisfaction of their companies and the stockholders of the companies. The fire resulted in a total loss to me practically and I got my $600.00, but the insurance companies were not satisfied to simply measure every foot of ground; they wanted to know how large the building was; they looked at the charred remains and everything else, and I noticed that it was all written down in detail, and I admired the system. It opened my eyes.

"I have been in the drug business for about thirty years, and during those thirty years I have taken an inventory twice (laughter). I started to take an inventory nine years ago, and it took me six months to finish it (laughter), and when I finished, I had to commence over again because I had bought a whole lot of things in that time, and we had used a whole lot

out of the different containers. I tell you it was a proposition—it was a job! Everything was accurately measured. My son and I, we worked like beavers to get everything summed up. I said to my son, 'Al, get everything and mark it down so many quarts, so many gallons, and so forth. Let's start in and get graduates and measure it off.' So we measured it off, and after we had proceeded a while, I said, 'By golly, we are up against it, ain't we?' (Laughter.) And Al said, 'Well, you have got to know what you are worth here, you are always saying you never know what you have in this store.' Says I, 'Certainly we should.' 'You are getting all you want, ain't you?' 'Well,' says I, 'I wish we were through.' 'And just now you said I could go on alone and finish this job! I haven't had a Sunday for two months since this has been going on!' Well, my friends, that is all right. When it was all over, I was considerably pleased, for I found that I was worth a few thousand dollars more than I thought I was, and I said to Al, 'See what your father has done!' (Laughter.)

"I run my store upon the 'European plan.' Everything is alphabetically arranged, and there is not a thing in the house that I cannot lay my hand on, even in the dark, although another fellow might not find it so well, because they do not understand the system. There is not a shelf that is not arranged alphabetically. But I have noticed, sometimes, when I got a shelf mixed up a little, I had an awful time finding things again (laughter). You know, I would be using two or three bottles in making a prescription, and place them back on the wrong shelf (laughter.) Still, we haven't had much trouble in that way.

"But as I said, I hardly ever took an inventory, and this insurance gentleman said, 'Now, Mr. Shriner, how about that inventory?' I says, 'I took an inventory about five or six years ago.' He says, 'Do you think that would stand in court?' I says, 'I don't know, I can't tell you whether it will stand in court.' He says, 'It will never stand in court, if it was made six years ago. You must take an inventory every year and you must itemize these things, because when you are called upon, you are supposed to show what you had in stock, and you must be pretty sure you had the things in stock so that the amount of the loss can be determined.' 'Now,' says I, 'I am going to take an inventory right away,'—but I haven't done it yet. (Laughter.)

"As I said, I have been a druggist for thirty years, and I have never believed in mixing other lines with my drugs in these thirty years. I have kept exclusively drugs. They are the important things, and no side lines,—no candy, or anything. But my son has just graduated from college, and that is where the trouble begins. He came home one day, and there was a family gathering. I says, 'What does this mean, everybody being here; what is the matter?' You see, I commenced to 'smell a mouse' somewhere (laughter.) My wife says, 'Al has something to tell you; he has something he wants to talk over with you.' I says, 'He wants to stay with me doesn't he?' 'Sure, he wants to stay with you.' Says I, 'He wouldn't leave me now after I had educated him, and I have been sending him to school for so many years? I think I would like to get some help out of him.' And she says to me, 'Surely, but under a certain condition.' 'How?' And she said it again, more emphatic than before. 'Well,' says I, 'what is it?' And Al says, 'Well, you know the way you have been running this store.' 'Now,' he says, 'this won't do any more. It won't do to be in the back room all the time, and when somebody comes in the store, crawl out of that back room.' (Laughter.) Says he, 'This has got to be changed.' 'Changed?' says I. 'Don't argue with me,' says he, 'I am doing the talking.' Says I, 'What are you going to tell me?' 'Well, I will tell you, we are going to get a soda fountain.' 'A soda fountain,' says I, 'what do I want a soda fountain for? I suppose I will be going in the confectionery business next.' 'No use arguing about it.' 'Well, what else do you want?' Says he, 'And we are going to put in a line of candy.' Says I, 'Are you going to make a Huyler's store out of this place, what else do you want?' 'Get a high grade line of candy,' says he. 'What else do you want?' 'We want some kodaks.' (laughter). 'I never looked through one in my life,' says I, 'how could I sell a kodak?' 'I will do that,' says he, 'we will get them in stock.' 'Anything else you want?' 'Yes, we want a good line of paint.' 'Well,' says I, 'that is pretty near the limit, do you want to start a wholesale house?' 'Don't mind,' says he. And then mother spoke up, she says, 'Yes, you will have to do something. There is no use talking,' she says, 'you want to keep Al with you, and he is going to make this his life work.' Says I, 'Now let's talk this thing over. Where did you get all those foolish ideas?' 'Why, foolish ideas—' and he commenced to bristle up, and I was surprised. I never saw him with fight in him before. Says I, 'Is that what you learned in college?' (Laughter.) 'Now, look here,' says I, 'I want to conclude myself. We never want that kind of stuff, and we want to put in our time with pharmacy and *materia medica*, and everything else, and I never heard such kind of business from my professors when I went to school. I can't understand how you learned all this, and bring it up here in my own house, and expect me to go in and trade in different things I don't know anything about,' (laughter.) Says he, 'The times have changed.' 'Yes, I am very well aware of that, that the times have changed,' says I.

"Well, to make a long story short, what do you suppose I did? I ordered the soda fountain; I ordered some cameras,—a monkey business (laughter).—and I made a contract with a paint house, and got a high grade line of paints, and then I looked around for a high class of candy. Well, it is all right! (Laughter.) Then I did not stop at that. I took up all the fixtures that were in there and put them in the back room; all of those things with their glass covers,

and put them in the back room, and ordered new fixtures for the store. And here is the thing I want to talk about,—the old prescription case, that dear old friend of mine, always behind it, you know (laughter), and I had commenced to love it too, and that is a fact, but my son, with his new fangled ideas said it had to go, and he had made up his mind that he was going to have a prescription room. Oh, the times are changing! By golly (laughter)! there is no use talking about it!' My son said, 'I am going to make a prescription room in the rear, and it is going to have hot and cold water.' You know, I had never had hot water before in all my life in the store, always had cold water, but we have hot water now (laughter), and in this prescription room we are going to have nice shelves, all under cover, with all the chemicals, and everything else that is necessary for prescription use and we are going to have showcases from the top to the bottom,—going to do it up brown while I am at it (laughter). And behind this old prescription room there used to be a wooden partition,— my gracious! I will never forget the trouble that gave me when I had it torn down from the plaster and dirt, and everything else, and we are going to have an ice cream parlor there now (laughter). I have ordered five or six nice tables, with glass tops, so that everything is sanitary, and about thirty or forty chairs. I said, 'I am going to do this thing up right.' (Laughter.) I says, 'I have been operating under the old system for thirty years, but we will have the new system now.' Everything will be thrown out of the store, and we will put on new wall paper, and get new fixtures, and everything else, and get these dimmed lights that throw the light softly down from the ceiling. I am going to put them in (laughter).

"And talk about your sanitary business! I have given an order for a show window that will be closed entirely, and be made out of nice quarter sawed oak from top to bottom, so that no dust can get in there, and in the winter time, in case it gets cold, the window will always be clear, and now I am getting steam put in the building. The landlord kicked and kicked,—oh, didn't he kick. He said it would cost him $45,000.00 because he would have to put it in the whole block, as the other tenants would want it, and they won't want to pay any more rent, but after a while the tenants all agreed they ought to have steam and were willing to pay for it. So that little town is going to boom now, I tell you, and so far as that goes, I don't know whether I am going to make a success of it or not, but if I don't make a success, I am not going to worry. The goods are there, and we are going to sell them, and that is what my wife said. My wife, you know, is my partner in everything, only I haven't got anything to say. That is all. (Laughter.) But we want to give the boy a chance. She said, and I don't know, 'They say we ought to have these side lines in, and all like that.' And if we have got to have them, well, we will. It is a question to my mind whether they belong to the drug business or not. I have always considered the drug business as a profession, and not a commercial business, and I have spent many hours trying to do well to the public in general, and I may have done some good in my small way, but I can't do at all as I used to. Years ago,—twenty-five or thirty years ago, people would come to us, and ask our advice, and we would give them something that would help them, with very few exceptions. This thing is changed, and the doctors now prescribe for this thing and that, and people rarely go to the drug-store now. It seems to me as if the physicians controlled the public in general now and we are forced, without any doubt, to go into different lines. These are things we have got to think about, and think about very seriously, and certainly the best thing to do is to stock up on things that will sell, and will not lose their value, and will not spoil on our hands. This is a thing that ought to be given deep serious consideration. We drug men in general do not get together enough, and there seems to be a difference between them when a druggist meets a druggist. There is not the comradeship that there should be, and we do not greet each other with out-stretched hands as we ought to do. We are not kind enough to one another. There is something strange about it.

"I am sure that all the organizations should come together, even if we do not know each other. As long as we are druggists, and have confidence in each other as men, and as students of human nature, and so forth, we ought to talk to one another, and be kind to one another, and if we do that, we are going to succeed as well as is any other business in the country, and we are going to have coöperation, and we are going to have an organization that we can all get behind. We druggists should not be afraid to tell one another about our business, and what we are doing to a certain extent. We should be friends. Of course, there are all kinds of druggists, as well as customers, and we should be like contractors going after a job; if they don't get it, they try to get another one.

"My one hope and wish is that the druggists can be more democratic with each other, and that they will not slight each other as much as some have been. There is no reason why we as druggists should not succeed, and I hope that we will find some way of making a memorandum of our stock without the necessity of spending six months to do it. (Laughter and applause.)"

MR. SCHAFER:—"The question of inventorying drug-stores in detail is clearly an impossible one, without getting up something which is untrue and incorrect and which will not stand in the courts. The proper way to avoid this difficulty is to eliminate the clause in the insurance policy requiring the taking of an annual inventory and to insert in its place a distinct statement that such inventory is waived. Only one company had declined to accept a policy of

this kind and they formerly accepted such policies, discontinuing that practice about two years ago.

In order to meet the situation and in view of the fact that the National Board of Underwriters were experts in their line of business and knew the difficulties of making a drug-store inventory, I offer the following resolution:—

"That a Committee be appointed to take this matter under consideration and to have authority to present it tentatively to the National Board of Underwriters, for the purpose of getting some satisfactory clause in the insurance policies which would apply to the drug fraternity."

CHAIRMAN MASON:—"It should be understood by the Section that the motion if adopted would but express the views of the Section. The matter would then be obliged to go before the General Session for their action."

The motion was adopted.

DISPLAYING CONFECTIONERY AND COUGH DROPS IN BULK.

FRANKLIN M. APPLE, PHAR. D.

This is an age of intensive advertising, which includes displaying one's wares to the greatest possible extent, so as to catch the eyes of the shoppers and create in them a desire to purchase the goods exposed to view.

Whether it is proper or improper to thus display one's merchandise depends upon the nature of the goods, and the care taken to protect them from destructive or contaminating influences.

I am led to pen these lines by practices that have come under my notice, and by comments that have been heard concerning customs that are followed by some of those of our calling, as the intelligent, observing members of society of to-day are becoming more and more critical in their standards of cleanliness and hygiene.

It may be proper to display, unprotected from dust and dirt, such goods as are not intended for consumption by mankind, those which can readily be cleansed by using a brush or duster, such as building materials and supplies for stables, but to offer for sale in an unhygienic and uncleanly condition commodities intended for internal consumption by mankind, is a very reprehensible practice that will not fail to unfavorably react upon those merchants who so flagrantly disregard the health and interests of the public.

This is especially true of those of our calling, who are looked up to by the public as being possessed of greater knowledge concerning hygiene and bacteriology, and who are presumed to be a higher class of merchants than those who have no educational standards to respect or maintain.

From the March, 1914, issue of Huyler's Hints I will quote as follows:—

"People are very exacting as to what comes from a drug store; not only must the goods be of the best quality, but the packages in which they are put up must appeal to the sense of neatness. The dry-goods clerk, the shoe clerk, the grocer—in fact, salesmen in all other trades—do not care much about the appearance of the packages they send out. A sheet of paper twisted or rolled around the article, a piece of string, and the thing is done; and nothing better is expected. But with the druggist it is different. We wonder how many druggists appreciate the effect of a neatly-tied package or a simple, neatly-printed label, upon their customers. And yet we know of people who prefer a certain store to another for no other reason than that the goods sent out of it are neater than those coming from the other."

What has been most truly stated by this editor concerning the containers and

the labels for confectionery is unquestionably true concerning the confectionery itself, including in this class of merchandise medicated confectionery, known under the trade name of cough drops.

There has arisen a custom to offer for sale cough drops contained in a wooden box, which has no provision for protecting the goods from dust, dirt and filth, which method of displaying such goods should be made a misdemeanor, punishable by a fine for both the manufacturer of the goods thus displayed and the vendor thereof.

One manufacturer and distributor of cough drops, displayed in such a container, furnished by them, also offers for sale sponges packed in containers which are thus described:—"Packed in an attractive box with transparent top, suitable for counter display; keeps the goods on view and free from dust, etc."

This appears to me to be inconsistency of the highest type—protecting "from dust and etc.," a commodity that can readily be cleansed (and which usually is well-wetted before it is offered for sale, in order to add to its selling value), and sending out another commodity, intended for internal use, that cannot be cleansed before ingestion—and some of such goods that I observed on sale in drug-stores were so dirty and filthy that they were absolutely unfit for any use.

Upon interviewing the manufacturer of these cough drops, and directing his attention to this reprehensible practice, also calling his attention to the manner in which they packed their sponges, I was informed that it was impossible to pack the cough drops in a similar container, as the extra cost of the protecting, transparent cover couldn't be added to the cost of production, for the price charged for these goods was not sufficient to warrant any further addition to it, and competition compelled them to maintain their low price, as the retail druggists would not pay the small extra cost of the more sanitary containers.

Can it be possible that the true cause for this state of affairs lays at the doors of the retail druggists?

Are they not perfectly willing to pay the small extra cost of a cleanly container, if they want to make use of a box for displaying such goods?

I, for one, have refrained from handling these goods owing to the nature of the display container—and it arouses in one's mind a question as to the regard for the rules of cleanliness and hygiene observed in a factory sending out such goods.

It is argued that a large display, in bulk, of merchandise is very helpful in disposing of it. This may be true of certain classes of goods, sold in certain classes of stores, but when retail druggists consider this method of increasing their sales, they must not lose sight of the moral effect such a practice will have upon the minds of the public concerning their professional work, of which their neighbors can only judge by their observations of their commercial customs; and judging from comment made by some of our patrons concerning some proprietors and their methods of conducting their business establishments, the public is becoming more exacting critics of one's method of doing business than we suspect.

Another custom that is followed by a number of druggists is to fill their show windows with a large supply of jelly eggs about the time of Easter, allowing them to remain therein unprotected for weeks. As these goods are somewhat hygroscopic you can well imagine the magnet they make for dust and filth. Just stop for a moment to think from whence comes the material that is deposited upon

these confections, and I cannot believe that you would have any desire to eat any of such sweetmeats were I to offer you some at this time.

The windows have been stated to be the eyes of the store; and, by the public, are considered to be an evidence of the policies that direct the establishment; hence, when confectionery is observed in one's windows that is unfit to be used as a food or confection, what do you suppose is the opinion of the public concerning the remoter recesses of our stores, where their medicines are manufactured, compounded and dispensed?

The advantages of displaying wares in a cleanly manner has been observed by leading manufacturers in many lines of trade, as witness the improved methods of exposing cigars for sale, with their transparent, cleanly cover-plates attached to their boxes, and the display containers that constitute the fixtures of the up-to-date grocery-store.

In a recent conversation with the manager of one of a chain of over two hundred grocery stores, I was surprised to learn how much thought was given to the question of hygienic displaying of goods by the owner. He bids for and receives the patronage of the best class of trade that purchases its supplies at this class of stores—the result being largely, because of less sanitary methods being employed by the other competing chains of grocery stores, in one of which my informant previously labored. He noticed the advantage his present employer has over his competitors, soon after entering his employ, and had learned from customers the reasons why they give their patronage to his present employer.

The proprietor of a well-conducted hennery, appreciates the monetary advantage of a cleanly kept establishment; and the higher price he receives for his eggs if they are perfectly clean, with no evidences of filth or dirt attached thereto, makes him, automatically, an apostle of cleanliness and hygiene.

Inasmuch as we have a reputation as professional men to protect, it is incumbent upon us to take the initiative as business men to practice cleanly methods in displaying merchandise for sale to the public, thereby demonstrating our knowledge of and respect for hygiene and bacteriology; and it cannot fail to have a beneficial moral effect, leading the public to look upon us as a superior class of merchants to whom they will turn when in need of first-class, dependable goods.

I would suggest that we make it an unalterable rule to never sell any commodity to anyone in a condition that we would hesitate to accept as clean enough for our personal use; and if we make this humanitarian decision, we will not display confectionery or cough drops in a container unprotected from dust, dirt and filth.

Were we to view, with a high power magnifying glass, the character of the material that constitutes the dust that invariably is deposited upon all exposed goods, we would hold up our hands in horror, to think that we had been guilty of supplying cough drops and confectionery contaminated by such offensive material.

Kindly remember that the crusade to "swat the fly" resulted from a close study of the material that he carried from place to place, the offensiveness of which was not suspected until science told us the true tale.

Let us demonstrate that we are abreast of the times and prove the fact that we are firm believers in the old adage: "Cleanliness is next to Godliness."

DISCUSSION UPON THE PRECEDING PAPER AND HIGH GRADE CANDY AS A SIDE-LINE.—(Printed in September issue.)

MR. C. W. TOBEY:—"The two papers just read are very interesting and useful ones, but that although, as one of the authors said, 'Cleanliness was next to Godliness,' there is one thing I cannot understand about the candy business, and that is, if you take the ordinary candies and put them in a jar with a card stating the price, they will remain there until they are stale; while if you take a hundred pounds of the same candy and expose it for sale in one of these large, open pails, nine out of ten of his customers would say, 'Give me a dime's worth or a nickel's worth.' This shows that cleanliness is not always appreciated. In the cheap stores, where all kinds of candies are exposed to dust more candy is sold, a hundred times more, than is sold in stores that keep goods in a cleanly condition. Sometimes it seemed as though filth was at par. While I believe in sanitary methods, yet the people will buy the goods displayed in pails when they will not purchase those from jars. Therefore, the way to sell the goods is not the sanitary way."

MR. NITARDY:—"I think Mr. Apple's points are well-made and so was that of Mr. Tobey. There is a compromise between the two methods which our firm has adopted. We buy our candy in bulk and then place it in paper sacks priced at five and ten cents. These sacks are printed with the name of the article and the firm's imprint and price. These we place in trays near to the cash-register and when the customer pays his bill, he will often be attracted to them and buy one. We sell a large amount in this way."

MR. FENNEL:—"The public are not discriminating. They see this candy exposed in these cheap, department stores and they think it is good enough, but when they go into a drug-store they expect cleanliness and a better quality of goods."

MR. HOLZHAUER:—"I believe that the candy-business of the future will be done by the drug-store. The tendency is in that direction. Some time ago I placed in my store a wheelbarrow which I filled with horehound drops. The amount of these which I sold was something incredible. I bought them in five-barrel lots and sold tons of them in that winter. The only objection was that when the candy became a little discolored the loss was high, for people would not then purchase it. People not only want to see the candy, but they like to sample it. Concerning high-priced candy the attention of patrons must be called to it. It will not sell itself. Every druggist can make a good business in high-priced candy if he will devote attention to it."

CHAIRMAN MASON:—"It appears to me that the tendency of the last four or five years has been in the direction of higher-priced goods. In many cases it is the attractive package that sells the goods at a higher price."

MR. WEAVER:—"Mr. Mason is right about the package selling the goods in a great many cases. I do not really believe that the candy of the dollar package is much better, but it is more attractive to the young man who is going to present it to a young lady and wants something nice."

MR. APPLE:—"The particular point I wished to make was as to the unsanitary method of displaying such goods. We must not lose sight of the fact that primarily we are pharmacists and are expected to know more about the dangers of exposing goods to contamination. If pharmacists wish to be termed the hand-maid of medicine, we should, in every way, try to show that they possess a knowledge greater than that possessed by the ordinary tradesman. It would doubtless be very easy for a druggist to secure from their candy-dealers pails with a glass cover and this would protect them and keep them in a sanitary condition."

AN OPPORTUNITY FOR DRUGGISTS TO HANDLE INSECTICIDES. DISINFECTANTS, SPRAYS, ETC.

E. V. HOWELL.

The object of this paper is to present the opportunity of druggists in this line of work, and to lay stress on two points.

First. The commercial advantages of this field of work. Second. To show that *not* to take advantage of this opportunity is a *loss* to the profession in these particulars: First. Loss of the profit that may be derived from this trade; Second. Loss of *other* trade *because* this work, professionally belonging to the druggist, is taken up by others who then naturally add similar products and thus encroach on the legitimate field of trade of the druggist.

The manufacture and sale of insecticides, etc., involving as it does a knowledge of poisons, should be permitted to only those qualified by training and experience to dispense them. The fact that in a large number of cases only a small amount of an insecticide is wanted and that to avoid the trouble in purchasing and preparing this small quantity the public at large is willing to pay a handsome profit to those putting up the ingredients in small packages properly labelled with directions for making, gives the opportunity for *professional work* to the druggist and a profit besides.

For instance, Bordeaux mixture costs about one cent per gallon. If a druggist prepares a small box of powdered blue stone, and a small box of lime with directions for making Bordeaux mixture he can derive a profit satisfactory to himself and to his customer. From the formulas following you can see the advantages of small packages for this line of trade.

As to the second point, the disadvantages of not preparing for this work: In my state (North Carolina) we have to have an exception made in our Pharmacy Act to permit grocers, and general stores to handle non-poisonous domestic remedies. The continual protest of our druggists to this encroachment on their trade is to a large extent the fault of the druggist. First. Because they have not demanded sufficient education and training for their work to *compel* the public to recognize them as a profession. As an example of this fact, I may cite the statement that has been made; that a clerk in a grocery store is as well qualified to handle patent medicines, borax, salts, castor oil, etc., as the druggist with some experience at a soda fountain and four months of hasty preparation for a board examination which he passes, has to handle prescriptions, poisons, etc. This failure to properly train and educate our pharmacists certainly weakens our position in regard to demanding and defining a legitimate field for the qualified druggist.

Again, the druggists in my state neglected the opportunity of furnishing to farmers borax for curing their meat, at a small profit, copper sulphate for soaking their oats and wheat, saltpeter for curing meat, etc., Paris Green for tobacco worms, pepper for preserving hams, etc.

What has been the result? Not only a loss of the small profit on this trade but the serious situation has developed that grocers have quickly added these products together with a long line of allied articles and have thus become entrenched behind a wall of protection—"handles products that his customers expect him to carry."—It is from this fortified position, one given to him without resistance, that many of our druggists wish to dislodge him.

Not until the public is convinced that pharmacy is more of a profession will this effort to dislodge have any degree of success.

Right here it might be well said, that the argument that the drug business is 90% commercial and 10% professional does not annihilate or even affect the proposition of better professional training. The training and examinations are for public safety, and the 10% of this business or the 1% of that, must be safeguarded as rigidly as if all of our business was professional, for the 10% here and the 1% there when added up makes *all* of the part that must be safeguarded.

If the druggist does not attach this line of trade, the tree-doctor, the garden-doctor, the bug-doctor, etc. will arise in your section. He will and has a right to

take this trade if you don't want it. If by your neglect he engages in this work, at least do not then begin to make efforts to restrict, hamper or dislodge him from a field you wilfully or unthoughtfully abandoned. It does harm to your own profession at a late day to attack certain fields of trade that should have been acquired by exploitation, and not reserved by restriction. It is this class of legislative work that meets with resistance although there is merit in the general scope of the work.

It is hoped that these suggestions and the few formulas given will call attention to a line of work that I believe should fall to the druggist professionally and should offer an excellent opportunity for profitable business. In the following formulas, especial attention is directed to the point of putting up each ingredient in small, neat packages of just the amount needed for small operations. A rose bush needs spraying, have a package prepared that makes a gallon or so. The small cost and the convenience in making will attract many to the experiment of spraying the rose. With simple directions for making and a list of diseases and the spray suitable for such diseases prepared, we have an opportunity of doing *professional work* with a *good profit,* resulting in excellent advertising.

BORDEAUX MIXTURE.

Blue Stone	560 grains
Lime	831 grains
Water to make	1 gallon

Dissolve the Blue Stone in one-half gallon of water in one vessel, slake the Lime in another vessel and dilute with enough water to make half a gallon, pour them together simultaneously into a suitable vessel and a blue solution should be formed.

Cost.—Per fifty-two gallons, forty-one and a half cents. Per gallon, four-fifths of one cent.

Uses.—Apple Leaf Rust, Apple Scab, Bitter Rot of Apple, Black Rot, Downy Mildew, Leaf Blight, Anthracnose, Wilt, Powdery Mildew, Black Spot Canker, Brown Rot, Fruit Bloth, Leaf Curl, Black Knot, Flyspeck.

BORDEAUX MIXTURE WITH ARSENICALS.

Bordeaux Mixture	1 gallon
Paris Green	70 grains

Make the Paris Green into a thick paste with water and add to the Bordeaux Mixture previously prepared. Should be strained before being used.

Cost.—Per fifty-two gallons, fifty-two cents. Per gallon, one cent.

Uses.—Codling Moth, Common Asparagus Beetle, Cucumber Beetle, Flea Beetle, Picle Worm, Three-Lined Leaf Beetle, Squash Bug, Canker Worm, Gypsy Moth, Plum Curculio, Squash Vine Borer.

BED BUG KILLER.

Camphor	12½ ounces
Paraffin Wax	12½ ounces
Rape Seed Oil	25 ounces
Benzine to make	1 gallon

Mix them.

Cost.—Per gallon, 96 cents.

BISULPHIDE OF CARBON.

Uses.—The Black Grain Weevil, Common Bean Weevil, Pea Weevil, Angumois Grain Moth, Croton Bug, Fruit Bark Beetle, Grain Weevils.

KEROSENE EMULSION, WITH WHALE OIL SOAP.

Kerosene	85.3 ounces
Whale oil soap	2.6 ounces
Water	42.6 ounces

Dissolve the soap in the water by the aid of heat, then immediately add the kerosene, make Emulsion by churning.

Cost.—Per fifty-two gallons, $3.79. Per gallon, seven and three-tenths cents.

Uses.—The Harlequin Cabbage Bug, White Grubs, the San Jose Scale, the Scruffy Scale, the Oyster Shell Bark Louse, the Woody Aphis, the Onion Maggot, Apple Root Plant Louse, Chinch Bug, Grape Phylloxera, Grape Vine Leaf Hopper, the Hop Plant Louse, Pear Tree Psylla, Red Orange Scale, the California Live Oak Scale.

KEROSENE EMULSION, WITH IVORY SOAP.

Kerosene	85.3 ounces
Ivory Soap	2.6 ounces
Water	42.6 ounces

Shave the soap in thin pieces into the water. Heat until the soap is dissolved. Remove the heat and add the kerosene, then churn thoroughly. This makes a 66% Emulsion.

For 10% Emulsion, add 5⅔ gallons of water.
For 15% Emulsion, add 3⅓ gallons of water.
For 20% Emulsion, add 2⅓ gallons of water.
For 50% Emulsion, add ⅓ gallons of water.

Cost.—Per fifty-two gallons, $3.79.

Uses.—Used for the same insects as Kerosene with Whale oil soap.

LIME, SULPHUR AND SALT WASH.

Lime (unslaked)	6.4 ounces
Sulphur	4.8 ounces
Salt	3.2 ounces
Water to make	1 gallon

Slake the lime, then add the sulphur and salt and heat to boiling.

Cost.—Per fifty-two gallons, seventy-eight cents. Per gallon, one and a half cents.

Use.—Used in spraying trees before the leaves appear.

LICE EXTERMINATORS.

Naphthalin	3½ ounces
White Wax	1½ ounces
Cocoanut oil	5¾ ounces
Petrolatum	5¾ ounces
Oil Bergamont	1½ drams
Oil Cloves	1½ drams
Oil Cinnamon	1½ drams
Oil Lemon	50 minims

Mix the fats and add the Naphthalin, stir until the latter is dissolved, allow to cool, then incorporate the oils.

Cost for above formula, thirty-six cents.

MANGE CURE.

Whale oil	100 ounces
Sulphur	6 ounces
Tar oil	12 ounces
Crude oil to make	1 gallon

Shake well and rub once a day.

Cost.—Per gallon, sixty cents.

NAPHTHALIN SOLUTION.

Naphthalin	10 ounces
Oil of Lavender	16 ounces
Alcohol to make	1 gallon

Mix them.

Cost.—Per gallon, $5.07.

Use.—A lotion for Mosquito Bites.

PARIS GREEN AND WATER FORMULA.

Paris Green	48 grains
Lime (slaked)	48 grains
Water to make	1 gallon

Mix the Lime with enough water to make a thin paste and pour into half of the water, stir thoroughly. Do likewise with Paris Green.

Cost.—Per fifty-two gallons, eight cents. Per gallon, seven-tenths of one cent.

Use.—Army Worm, Asparagus Beetle, Apple Leaf Skeletonizer, Blister Beetles, Bag Worm, Celery Caterpillar, Celery Looper, Celery Leaf Tyer, Cotton Worm, California Devanting Locust, Elm Leaf Beetle, Irish Potato Beetle, Strawberry Weevil, the Cabbage Plutella, the White Cabbage Butterfly, the Cabbage Plusia.

POTASSIUM SULPHIDE FORMULA.

Potassium Sulphide	145.5 grains
Water to make	1 gallon

Mix them.

Cost.—Per fifty-two gallons, fifteen cents. Per gallon, three-tenths of one cent.

Use.—Red Spider.

RESIN WASH ADHESIVE.

Powd. Resin	1 pound
Concentrated Lye	3.2 ounces
Fish oil	5 ounces
Water to make	1 gallon

Place the Oil and Resin in one quart of water and boil until the Resin is thoroughly softened. Dissolve the Lye in a separate vessel and add it slowly to the Resin Mixture, stirring constantly until well mixed. Then add enough water to make the whole measure one gallon. Continue the boiling until the mixture will mix readily.

Cost.—Fifty-two gallons, $3.64. Per gallon, seven cents.

Uses.—With a few plants like cabbage and collards which have very smooth foliage, difficulty is often experienced in making poison mixtures adhere and for this purpose this mixture is used.

RESIN AND SULPHUR SOLUTION.

Sulphur	1½ pounds
Powd. Resin	580 grains
Caustic soda	1 pound
Water to make	1 gallon

Mix Sulphur and Resin and make into a thick paste with water. Dissolve the caustic soda in water and add to the first mixture, stir, after boiling ceases and the mixture has acquired a brownish color add half a gallon of water and stir well, finally add water enough to make one gallon.

Cost.—Fifty-two gallons, $5.94. Gallon, nine and a half cents.

Uses.—Red Scale, San Jose Scale.

RESIN LIME MIXTURE.

Resin Mixture	7.4 ounces
Milk of Lime	19.2 ounces
Paris Green	87.5 grains
Water to make	1 gallon

Add water to the Resin Mixture and mix thoroughly, add the Milk of Lime and then the Paris Green, previously made into a thick paste with water. This mixture must be freshly prepared when wanted.

Cost.—Fifty-two gallons, thirty-six cents. Per gallon, seven-tenths of one cent.

Uses.—Cabbage Webworm, Imported Cabbage Worm, Native Cabbage Worm.

SOLUTION ARSENATE OF LEAD.

Acetate of Lead	96.3 grains
Arsenate of soda	35 grains
Water to make	1 gallon

Dissolve the Lead Acetate and Sodium Arsenate each separately in three ounces of water in wooden vessels, then add water enough to make one gallon.

Cost.—Fifty-two gallons, sixteen cents. Per gallon, three-tenths of one cent.

SOLUTION MERCURIC CHLORIDE.

Bichloride Mercury	72 grains
Water to make	1 gallon

Dissolve the Bichloride Mercury in about one quart of water by the aid of a gentle heat, then add water enough to make one gallon.

Cost.—Per gallon, one cent.

Use.—Used to disinfect the knife or other tools in cutting out Pear Blight.

SOLUTION COPPER CARBONATE AMMONIATED.

Stronger ammonia water	1 ounce
Copper Carbonate	53 grains
Water to make	1 gallon

Make the copper carbonate into a thin paste with water and slowly add the ammonia water, then add enough water to make one gallon.

Cost.—Fifty-two gallons, $1.56. Gallon, three cents.

Use.—This insecticide is mainly used as a substitute for Bordeaux Mixture upon ornamental plants and maturing fruits as it does not leave the stain that Bordeaux Mixture leaves. It is also inferior as a fungicide.

Destructive to Powdery Mildew.

SOLUTION AU CELESTE MODIFIED.

Blue Stone	312.5 grains
Ammonia Water, 10%	3.2 ounces
Sal Soda	1.8 ounces
Water to make	1 gallon

Dissolve the Blue Stone in two quarts of water, add the Ammonia water and dilute with water to one gallon and dissolve in the Sal Soda.

Cost.—Fifty-two gallons, $2.60. Per gallon, 5 cents.

Use.—This wash should not be used on the foliage of stone fruits and should be applied to other growing plants only with due caution.

SOAP SOLUTION.

Laundry Soap	6 ounces
Water to make	1 gallon

Reduce the soap to fine shavings and dissolve by the aid of heat in one-half gallon of water, then add enough water to make one gallon.

Cost.—Fifty-two gallons, $1.95. Gallon, three and seven-tenths cents.

Uses.—Apple Tree Borer, Fluted Scale, Melon Plant Louse, Pear Tree Slug, Red Spider.

SOLUTION OF LARKSPUR AND BICHLORIDE MERCURY.

Fluidextract Larkspur	8 ounces
Bichloride Mercury	28 grains
Water to make	1 gallon

Mix them.

Cost.—Per gallon, $1.76.

Use.—Crab.

SOLUTION FOR ITCH.

Lime	1 pound
Sulphur	2 pounds
Water	1 gallon

Mix and boil one hour, then strain.

Cost.—Per gallon, nine cents.

To obtain the best results from the use of a fungicide, it is necessary that it should reach all parts of the plants subject to the attacks of the fungous parasites. Many devices for accomplishing this object are now on the market. All these fall within three principal groups, namely, knapsack pumps, hand pumps, and horse-power pumps. The knapsack pumps are designed especially for low growing crops, such as grapes. The hand-power pumps can be used in a number of ways and if strong and durable are probably the most useful of all the various styles of apparatus. The horse-power sprayers are designed to be drawn by one or more horses and operated by the same means. All these machines must be provided with nozzles that will furnish a mist-like spray and at the same time be easy to clean of any obstruction that may clog the necessarily small opening. There is no form of nozzle that so well fills these requirements as the Vermorel, which is now sold with nearly all spraying outfits. Where good labor is cheap and the crop is mainly grapes and low growing plants, the knapsack form of sprayer will probably be found as economical as any apparatus. For orchard work however, more powerful machinery will be required. Probably the most satisfactory form of apparatus for this kind of work consists of a strong force pump, mounted upon a barrel or hogshead. If mounted upon these, arrangements will have to be made to conveniently draw them through the orchards. The horse-power sprayers are nearly all complicated and expensive, moreover they can not be used satisfactorily under as many different conditions as the hand pumps mounted on suitable reservoirs. They may therefore, be dismissed with the statement that it is only in exceptional cases, as, for example, in case of an orchard of several hundred acres on level ground, that it will pay to use them.

With reference to the cost of the several kinds of apparatus mentioned it may be said that good knapsack pumps, complete in every detail may be obtained at

$10 each. The cost of a first-class orchard outfit should not exceed $25. Some kinds, in fact, may be fitted up for $10 or $12.

There are many farmers and many others who grow a miscellaneous line of fruits, such as a few grapes, pears, apples, etc.; in such cases it is desirable to have an inexpensive and effective apparatus that will answer for the various crops. The hand-pump which consists of a small force pump provided with a long piece of discharge hose and a cyclone nozzle. The whole outfit can be purchased and put together for $5, and will be found in every way superior to the many forms of syringes on the market. The pump is strong and durable and although small, it will throw a solid stream, the size of a lead pencil, for more than thirty feet. It may be used for trees of all kinds, as well as for vines and low growing crops.

I have clearly shown the preparation, use and cost of some of the most important insecticides. We know that insects do untold damage to the fruit and vegetable crops of practically every farmer in the country. Having shown that the cost is practically nothing and if insecticides are used they will save the farmers of the country a vast amount of money each year, it clearly follows that insecticides should be put within the reach of every farmer, and it seems to me that the druggists as a side-line and almost a part of his business is the one man above all others to supply this vitally needed remedy for the farmer. This naturally falls within the scope of the druggist and if he will avail himself of the opportunity of thus aiding the agriculturist, he will receive an abundant return.

THE ADVERTISING METHODS I USE.

HAROLD N. BRUUN.

It has been said, "the merchant or manufacturer who fails to advertise is very much like the bashful beau who throws his best girl silent kisses in the dark. He may know what he is doing, but no one else does." To know what one is doing is necessary, but to know why one is doing a certain thing, is of great importance.

In discussing my advertising methods, I will not dwell long upon the methods themselves as they are neither new nor original, but will endeavor to tell you my reasons for using them, which I believe will be of more interest to you.

I am located in a foreign neighborhood in a large city. A large percentage of my customers are illiterate. They are working people, employed in shops, factories and in heavy work. The average income of the family, according to J. W. Jenks and W. J. Lauck, in *"The Immigration Problem in the United States,"* is about eight hundred dollars a year. Their needs are simple.

The Problem:—What kind of goods are these people using now? What class of goods do they not use, but should use? How can I command their attention and interest them in my wares?

The Drug Store Paper:—This I use for the following reasons: The children of the foreigner attend school and the older people are eager to advance their

knowledge of the English language. These people do not subscribe for magazines and will more carefully peruse the drug-store paper, than the average American who devotes his time to reading the weekly or monthly publications containing stories by highly paid authors.

Window Displays:—These that attract attention require considerable thought and study. The average person goes along engrossed with his own thoughts and it takes something unusual to divert his mind from himself to the windows. We spend considerable time on this feature of our advertising.

Gifts:—At regular intervals we give away, with every purchase of twenty-five cents or over, a gift of some sort, usually a small bottle of perfume. This creates a feeling of friendliness and good-will.

Personal Advertising:—The biggest factor in dealing with this class, is what I would term, personal advertising. By this I mean the treatment of the customer while in the store. People who are ignorant and often poorly-clad, seldom receive courteous attention, therefore they appreciate it all the more when they do. We try to make our customers feel at home and treat them with consideration. I have impressed upon my clerks, that it is the customer who pays their salaries, the rent and my profits.

Special Methods:—One of the things my customers need, but few use, is a good tooth brush and a tooth powder. To acquaint them with their needs in this direction, I have printed small slips of paper in three languages, English, Polish and Italian. I dwell upon the necessity of keeping the teeth clean in order to preserve them, and save dental bills. By this means I am rendering them a real service and at the same time promoting the sale of my goods.

I believe in specializing on one preparation or product. In having something a little better than any one else, if possible. I give special care to the handling of cod liver oil, importing it direct from Norway. I see to it that it is always fresh and sweet. This I advertise as a leader, not in price but in quality, in the Scandinavian papers.

As you see my methods are neither new or startling, but I trust that my paper will be of interest to those engaged in the drug business under similar conditions, or to those engaged in the drug business under different conditions who have made a study of their possibilities.

WHAT IS YOUR BEST PAYING SIDE LINE?

FRANK RICHARDSON.

My best paying side line was for a long time taken as a matter of course and not much attention paid to it.

But after a time my attention was called to the possibilities in the cigar department, and I began to take notice, purchased a first class case with lots of moistening surface and a hygrometer, to keep me informed as to the condition of the atmosphere in the case.

Care was taken in selecting first-class brands at the various prices, and then we got behind the goods and began to "boost."

We were careful to keep the moisture in the case between 60-65 degrees, keeping the case tightly closed when not in use, consequently the stock is always in perfect condition and now we have the reputation of being the only store in town, whose stock is not all dried out during the winter time, this, of course, has helped the trade greatly and the cigar department has grown until it is the best paying side line in the store, doing nearly three times the business it did before. During the winter months, when your store is heated by artificial heat, cigars and tobacco must be watched very carefully and a certain degree of moisture (60-65) maintained in the case constantly, lest your stock dry out, lose its flavor and your trade go elsewhere, where the stock is properly kept.

I figure that my cigar department pays my rent, light and heat, and that is doing pretty well in a town of 1600 with 15 places selling cigars and one cigar manufacturer.

Too little attention is paid to this department in the average store, the stock is purchased, placed in the case and no further attention given it except to hand out the goods when called for.

Cigars are very sensitive to artificial heat and quickly dry out and lose their flavor and can not be brought back to their original condition. A little thought and attention will prevent this. In the first place get a good tight case, with plenty of moistening surface, place a hygrometer in it, and then see to it that the moisteners are filled at least once a week or as often as the hygrometer falls below 60 degrees, and keep the case tightly closed when not selling from it.

Have variety enough to suit all classes of customers, and endeavor to learn the likes and dislikes of your customers.

When you put in a new brand show it up and pass out enough samples to start a demand for it.

In a community such as the one I live in, special sales and premiums do not pay, but by careful attention to keeping stock, giving good value, and a pleasant word to the customer any one can largely increase the trade in this department, without adding to the expense account.

EFFICIENCY AND A NINE HOUR DAY.

C. A. WEAVER, PH. C.

In taking up this subject of shorter hours for the Retail Druggist, I have been led to believe, from an experience of some twenty-eight years, behind the counter, that the working of long hours was an unnecessary hardship that could be easily avoided.

This paper is written from the view-point of the so-called "two-man" drug store, comprising a registered proprietor, and one registered clerk, which I believe, constitutes about 60 per cent. of all the drug stores of the United States—stores doing a business of from fifteen to thirty thousand dollars a year. The smaller amount representing the two-man store, with the limited territory and

little effort, and the twenty to thirty thousand dollars, the busy, "get-there" store, with a larger field, and a more pronounced effort to build up trade.

Starting some twenty-eight years ago, as errand boy in a drug store, I naturally inherited the then prevailing hours of 7 a. m. to 10 p. m., with one night and one afternoon or two nights and part of every Sunday off.

It seemed only natural to fall into this rut, as all drug stores were conducted on very much the same plan and any scheme for shorter hours at that time would have been pure heresy.

My experience of the first eighteen years resulted in my coming to the following conclusion, that the drug business with its long, nerve-wracking hours, was not worth its remuneration, especially if a probable loss of health were considered.

It was quite natural then, at this time that I decided to forsake the retail for the manufacturing end of the business, the latter offering every opportunity for the continuation along lines of work, for which my education had prepared me, at the same time diminishing the hours of labor to a point where rest and recreation, so absolutely necessary to a man's health and efficiency were in evidence.

Despite the fact that the relief from long hours was fully obtained, after one year I accepted a position as manager of the store in which I had formerly clerked, having come to the conclusion that the retail drug business offered a greater opportunity, over the manufacturing, for the individual, and with the firm conviction that a scheme of hours could be evolved in which greater results would be obtained by concentrated effort, over a period of eight or nine, rather than a weakened effort extended over fifteen or sixteen hours, as formerly.

At this time I was fortunate in having the services of a very good clerk, who felt very much as I did in regard to the long hours devoted to the accomplishment of a given amount of work. So after considering the requirements of our store, we decided the work could be done to better advantage in shifts averaging about nine hours each, sometimes a little more, sometimes a little less. One week the clerk opening the store at 7 a. m., having one and a half hours for dinner, and leaving at 6 p. m., myself coming on at twelve, noon, having one hour for supper and closing at ten p. m.

We also worked but six days a week—one week having all day Saturday and the next week, all day Sunday off. This was the only hardship that went with the arrangement, as it necessitated having our meals in the store one day each week, but as it gave us one whole day for recreation, we were glad to overlook this slight discomfort. This Saturday and Sunday work has been varied and changed from time to time up to the present moment.

This scheme of hours was continued for some seven years, and still appeals to me as the more desirable one, as the hours of labor are continuous. Individual requirements, however, necessitate various modifications, for instance at the present time, we are working in divided shifts—one man working in the forenoon and evening of one day and the morning and afternoon of the next day, which gives each man every other afternoon and every other evening off. This plan, like the preceding one, provides for about nine hours in the store each day and has been in operation the last three years.

To say the original scheme was a success is putting it mildly. It was a pleasure to see that clerk come in at noon of the days he was to work the late

shift—to see him get into his store coat, and then notice the work fly. It disappeared like magic. This man was not tired out, he was not filled with the toxins of fatigue—he was "Johnny-on-the-Spot"—he had a new toy—he had the pleasure of labor, with the time for play coming, also the time for rest, and plenty of it in sight.

The clerk and I knowing it was a test case, naturally started out to make it a success, and we did. The work of the store was never so well or quickly done. Detroit at this time was just on the rise, and our business grew by leaps and bounds, without seemingly to disturb or very much overwork us at any time.

Efficiency is the order of the day. It is not how long we work, but how much we accomplish in a given time. I believe a man can do about so much work in a day, and from experience, believe this amount can be accomplished in eight or nine hours of industrious labor. If your labor be extended over a much longer period, a slowing down, a lack of "pep" and a general loss of efficiency will follow.

For a time the work *may* be done, and possibly as well, but at what a foolish cost, when at least one-third of the time might have been spent away from the store.

To-day, when I hear a druggist complain of the confinement and long hours of his business, I know he must be at fault personally. He either does not work long hours, or applies himself only half-heartedly, at the time he is supposed to be on duty. The latter is undoubtedly the main trouble. He has no regular hours for himself. He comes and goes when he pleases and is only governed by the clerk's time off. The store is on his mind when he is not there and he thinks he is working. Let him get right down to "brass tacks" for he is not "delivering the goods." He could not work for anyone else in the slip-shod way he works for himself, and what excuse a man can offer for giving himself poorer service than he would render others, is "too deep" for me.

Give yourself and your clerk the benefit of shorter hours and then see that you devote those hours entirely to work. *You* are the one to set the example for your clerk—you are the measure by which he plans his work.—Set him an example by being prompt and industrious in your hours of labor. Visiting, standing around unoccupied, reading the newspapers, etc., never brought a man anywhere in this world of business, with its keen competition demanding your attention every minute. Hustle a little—get all the work finished for once and strive to keep it so, by systematic effort. The appearance of your store resulting in more and better business, will repay you beyond your fondest expectations.

That the unfavorable impression too often given customers by a clerk or even a proprietor, in grudgingly leaving a story or magazine, to half-heartedly wait on them, should be eliminated entirely from our stores, there can be no question, and undoubtedly shorter hours is the solution. Read more, play more, rest more away from business, but work more, strive more, accomplish more during your hours of labor.

Druggists may argue that locations of their businesses, etc., may make this short hour scheme out of the question, but my contentions to the contrary are based on the fact that my personal experience covered two neighborhoods vastly different from each other, and in each the resulting success was the same.

Many imaginary obstacles may arise, in the minds of the individual, as he endeavors to apply the shorter hours to his own business, but experiment will convince the most skeptical that this is one of the problems of the drug business that can be most easily solved.

In summing up, I would have you thoroughly appreciate the fact, that this is not merely a suggestion or theory, but my personal experience of short hours in the past ten years of my business life.

Any druggist can demonstrate the practicability of shorter hours to his entire satisfaction, if he will but make a determined start, necessarily with the co-operation of his clerk and help in general, along the lines of systematic labor.

Isn't it really worth the while when a better-kept, and "up-to-the-minute" store naturally producing more business, is the result, while at the same time, health and recreation are not sacrificed, but on the contrary, are a direct outcome of the whole scheme?

Surely you will find that much of the weariness and dissatisfaction with our work, which we as employers experience, and much of the unrest and shifting around of our clerks will disappear.

TREATMENT OF WOUNDS IN WAR.

A striking fact observed in the treatment of wounded in the present war, whether on land or sea, is the great prevalence of sepsis. In the author's own experience, all the wounds he had seen so far were septic, some of them very badly so. Tetanus and acute spreading gangrene are also common, though tetanus has not yet been seen in the naval wounded, and this can be understood when it is remembered that the tetanus bacillus reaches wounds from the soil. The prevalence of sepsis in the large wounds is possibly to be accounted for by the length of time which may elapse after the injury before the patient comes under treatment. As to the treatment of this class of wounds, the author lays it down as an axiom of practice that if the treatment can be carried out within the first twenty-four hours (and, in the case of wounds soiled with earth, forty-eight hours) an attempt should be made to kill the organisms which have entered the wound. For this purpose, chemical antiseptics are probably the only means available, and in this connection there are two important points to be taken into consideration—namely, to kill actively-growing bacteria, and also the spores of bacilli. A saturated aqueous solution of carbolic acid (1 in 20) will kill naked, actively growing bacteria in a few seconds, but will not kill spores with certainty under twelve to fifteen hours. Liquefied carbolic acid, however, will kill spores in a very few minutes, and this must be used for wounds soiled with earth. Carbolic acid is an anæsthetic, and its application causes very slight pain, which subsides almost immediately. But iodine, though practically of the same antiseptic power as carbolic acid, has a number of disadvantages, one of them being the great pain it causes, this lasting for a considerable time. Therefore, the author prefers carbolic acid to iodine not only for the disinfection of the skin, but also, and more especially, as a means of destroying the bacteria which have already entered wounds before they come under the care of the surgeon.—*Sir W. Watson Cheyne, Bart.* (*Brit. Med. Journ.*, November 21, 1914, 865).

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-Second Annual Convention

ASSAYING GALENICALS.

JEANNOT HOSTMANN.

At the Nashville meeting, the writer contributed a paper on "The Necessary Apparatus in a Retail Pharmacy,"[1] which did not create much discussion. Since then, it has been both praised and criticized. Very little praise emanated from retail pharmacists but quite some criticism. The praise was usually bestowed by men not actively engaged in the retail business.

At the annual meeting of one of the state associations, the writer heard a member criticize the enforcement of the "Food and Drug Law" or rather laws, and was surprised when the statement was made that if retail pharmacists attempted to assay and standardize their drugs and preparations, the cost would be prohibitive.

"Are we druggists supposed to spend a thousand dollars for the equipment of an analytical laboratory, and then spend twelve hundred or more dollars per year to hire a chemist to run it for us?" This was his query. He did not, as I do not believe any progressive pharmacist would, deny that assaying and standardizing were absolutely necessary to the welfare of our profession; he simply, like many others, seemed to think it more important to attempt to standardize the price of "Brown's Cureall" than to raise pharmacy to a professional level in the eyes of the physician and layman by actually assuring himself by tests made in his establishment that the drugs he was selling and dispensing were really as represented.

Several papers have been read at various meetings during the current year, discussing the separation of the professional pharmacy from the commercial drug store. A paper will be read at this meeting in which the author recommends the formation of a national association of prescriptionists. All this shows the trend of thought of many thinking pharmacists, which no doubt will sooner or later bear fruit in placing pharmacy where it belongs, viz: A profession, whose first thought will always be to save human life and alleviate and prevent human suffering.

Martin I. Wilbert, in Reprint No. 189 from the Public Health Reports, after showing a summary of adulterated and sophisticated drugs collected during the time of one year, calls attention to the duty of pharmacy as follows:

"In conclusion it may be reiterated that the more evident shortcoming in the present-day enforcement of pure-drugs laws is the general failure to properly place the responsibility for the nature, kind and purity of the medicines supplied

[1] J. A. Ph. A., 1914, 697.

to the consumer where it belongs. This shortcoming is being corrected, to some extent at least, by recently enacted laws to regulate the practice of pharmacy by placing the responsibility squarely on the person dispensing the drug.

"The proper enforcement of laws designed to regulate the practice of pharmacy in conjunction with pure-drugs laws, should relieve physicians and the public of any doubt as to the composition, purity, quality and strength of all drugs and medicinal preparations used in the treatment of disease. As these laws are enforced at the present time it is plainly evident that the methods of control are inadequate and do not serve to safeguard public health as well as they could or should.

"Boards of health and other State and Federal officials intrusted with the enforcement of these laws should endeavor to call attention to the desirability of having druggists exercise a close scrutiny of the drugs and preparations included in their stock, to keep drugs, chemicals and preparations in suitable containers, to throw away old useless material, and to see that scales, weights, and measures are reliable and accurate under the conditions imposed upon them.

"Some effort should also be made to see that drug stores are equipped with the necessary analytical apparatus with which to analyze or examine all supplies and thus assist in maintaining a more efficient control of the articles sold as medicine.

"Consistent and efficient control of the identity, purity and strength of all drugs and preparations as furnished the consumer would make for progress in the science of medicine and should prove to be an important factor in promoting public health."

The United States Pharmacopœia presents the tests in such a way that any pharmacist who is a graduate of any good college of pharmacy and cares to employ the knowledge that he has gained as a student will have no trouble in determining whether the drugs and chemicals he purchases and dispenses and the preparations thereof, are up to standard.

If the pharmacist is a graduate of a college of pharmacy where pharmacy is taught as it should be, and employs only such graduates in his Prescription Department, he will not have to hire any chemist to attend to this class of work although it may be necessary for him or his employee to spend some of the time now spent in dressing windows, etc., in the laboratory.

The false ideas as to cost of equipment caused the writer to compile the following table which embraces the most important utensils needed to perform the necessary tests:

INVENTORY OF EQUIPMENT AND COST.

Volumetric Flasks.

2	100 cc.	.60
2	250 cc.	.80
2	500 cc.	1.40
2	files—rat tail	.20
2	files—triangular	.20
2	lbs. rubber stoppers	3.00
3	lbs. glass tubing	1.00

Flasks.

2	60 cc.	.20
2	125 cc.	.25
2	250 cc.	.35
2	500 cc.	.40

2 porcelain crucibles with covers	.50
3 triangles	.15
2 funnels—2″	.15
2 funnels—3″	.20
2 packages filters	.50
a pycnometer	1.00
a test tube rack	.50
1 dozen test tubes	.25
a Bunsen burner	.30
3 ft. rubber hose	.25
2 100 cc. beakers	.20
2 250 cc. beakers	.30
2 3″ evaporating dishes	.24
2 2″ evaporating dishes	.20
2 60 cc. separatory funnels	1.50
2 125 cc. separatory funnels	2.00
1 water bath, 6″	1.25
2 burettes, 50 cc. in 1/10 with glass-cock	3.00
2 pipettes, 1 cc.	.15
2 pipettes, 2 cc.	.15
2 pipettes, 3 cc.	.20
2 pipettes, 5 cc.	.25
Oven	5.00
Desiccator	1.00
Pt. Foil	.75
Pt. Wire	.30
Glass Rods	.15
Microscope	75.00
Balance	20.00
Weights	3.50

Thus you will see it will cost about twenty-five dollars to buy the most necessary utensils, if the store is not equipped with a good balance, and many are not, why then twenty-five dollars more will buy the balance and weights from one milligram to one hundred grams. An oven and desiccator will cost six dollars more and, finally, a good microscope can be purchased for seventy-five dollars.

This comparatively small outlay will repay the pharmacist, who intelligently and faithfully uses the outfit after installation, many times over financially, as well as otherwise.

Columbia University, College of Pharmacy.

The value of the exports of perfumery to the United States from the consular district of Nice, France, decreased from $1,578,228 for 1913 to $755,671 for last year.

Editorial

Ernest C. Marshall, Acting Editor.....63 Clinton Building, Columbus, Ohio

COMMERCIAL PHARMACY.

THE address of Governor Hammond of Minnesota at the meeting of the Minnesota Pharmaceutical Association, which appears in this issue, is most timely and interesting.

It should be read thoughtfully by every member of the profession.

As one entirely outside of our circle, he pleads with us to hold fast to the high standards it has always maintained and not to allow it to become entirely commercial. Mark you, this is not a cry from the past; from an old-time pharmacist, who wishes to see the profession restored to old ways and old manners. It is from a man of the present day; one not particularly in love with the past, but who is in immediate touch with the present, who has his eye to the rising sun. He tells us that commercialism is simply a cry for the dollar. That it is unworthy of us, and that we should strive to get away from that thought and build our profession upon broader and better lines, the lines which have brought to the name of Pharmacy dignity and honor.

It is almost to our shame that such counsel should be made to us from outside. Are we not intelligent enough to grasp the situation for ourselves? Has the time arrived when we cannot see the drift of things with our own eyes? Have we not wit and wisdom enough to appreciate the sacrifice of all that makes Pharmacy noble?

The opinion of Governor Hammond cannot be taken as a single view of a careless observer. It is the concrete expression of the opinion of the mass of the people. What he has said to us plainly and directly, the world is thinking and saying of us. The people are observant of the change in Pharmacy and they deplore the retrogression of the profession from a science to a business. No one who is good at heart but regrets and mourns at the self-ruin of a man;—then how much more would they mourn at the degradation of a class of men, who have advanced the world by their work along scientific lines.

It was not, and it is not necessary, to sink the scientific side of our profession in order to lift the commercial side. The latter has its place in our profession,—that no one will attempt to deny. But there is no need to sacrifice the art of Pharmacy, its very soul and inspiration, entirely to the commercial side.

As heartily as any one could desire we would like to see all pharmacists successful commercially, successful financially, all of them wealthy. But we cannot think that in order that they should be successful commercially, that they need to declare themselves non-professional, to relegate all the fixtures and stock which from time immemorial have marked the pharmacy, to a back-room limbo, and display only the articles belonging to the commercial side of the business; in fine, to

banish from sight all that makes a pharmacy distinctive, and to display only those goods sold in common with other stores without peculiar character. To deliberately throw away their scientific reputation and place themselves in open competition with other merchants who are without any technical training.

Develop the business instinct to its full, but do not sacrifice what is a valuable asset to you in so doing.

The sale of biologicals is more profitable than that of cameras or post-cards or magazines, and in that field there are fewer competitors, and in the handling of such articles you will make yourselves of more worth to the world and to your profession, and separate yourselves from the common business man.

Not that this will make you better than the common man,—not at all. Knowledge makes no man a better man than another. What one man knows more than another in one line, is compensated by what the other knows in another line. You can dispense a lot of quinine pills to a blacksmith, which it is impossible for him to make, but he can forge steel which you would find it impossible to accomplish. He can temper the spatula you use in making the pills and you cannot. So that the average of knowledge is in balance between you. That is his trade, and yours is that of a pharmacist, and as he is of value as a blacksmith and by reason of his knowledge of temper, of iron and of steel, of forging and of casting, so you are of value the more you know of drugs and chemicals, of percolation of solution, of compatibles and incompatibles. Commerce, yes, admit it all you please along your own line. Know whence your stock comes, its impurities, its adulterations, keep step with your rank, and be a PHARMACIST. In that way you will elevate and raise the profession of Pharmacy and make yourselves better, wiser and wealthier men.

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THE NATIONAL INSURANCE ACTS OF GREAT BRITAIN.

THESE acts (1911-1913) for information regarding which we are indebted to the Chemist's and Druggist's Diary, are to provide insurance against the expenses of sickness and loss of wages from unemployment, by persons earning not more than £160, ($800.00) a year.

It is, in effect, a compulsory insurance, to whose funds the employer, the employe and the government contribute; the employer paying from 3d. to 6d. (6 cents to 12 cents) a week; the employe from 1d. to 4d. (2 to 8 cents) weekly, while the government pays two-ninths of the male benefits and one-fourth of the the female benefits and in addition defrays all expenses of administration.

All workers employed are required to join an approved Friendly Society, of which the Chemist's Friendly Society is an example.

These societies furnish to their members a card upon which are spaces for the affixing of thirteen stamps. The employer is required to affix to this card every week a stamp, to show that the owner of the card has paid his assessment and the employer is authorized to deduct from the employe's wages the amount of the stamp.

The benefits paid in Britain are:

MEN.

1. Medical benefit; that is free medical attendance and medicine, or a money payment.
2. Treatment in a sanitarium in case of consumption.
3. Sick benefit; 10s. (about $2.50) a week for 26 weeks.
4. Disablement benefit; 5s. ($1.25) a week afterward if still incapable of work.
5. Maternity benefit; 30s. ($7.50) for wife on confinement.

WOMEN.

1. Medical benefit, as for men.
2. Sanitarium.
3. Sick benefit; 7s. 6d. ($1.87) a week for 26 weeks.
4. Disablement benefit, as for men.
5. Maternity benefit; £2 ($10.00) unless husband is insured. She is paid a sick benefit also after confinement.

The Medical Benefit comprises medical attendance and treatment, with provision of proper and sufficient medicines, and such appliances as are allowed by the Insurance Commissioners.

Every registered medical practitioner is entitled to admission as a panel-doctor and insured persons may select as their attendant any physician upon the list, within the area in which they reside.

Unless the insured person resides more than a mile from the nearest drug-store, the doctor does not supply the patient with drugs or appliances. For the supply of these, the Insurance Commissioners contract (1) with registered chemists and with limited companies, (recognized by the Poisons and Pharmacy Act, 1908,) to dispense prescriptions and to supply drugs and appliances; (2) with other persons to supply drugs and appliances, and (3) for the supply of appliances only.

To every panel-chemist is supplied a Drug Tariff or price-list of the charges he is entitled to make. This costs him 6d. (12 cents). It states (1) the prices he may charge for quantities from one-half grain or minim to one ounce of each article; (2) Names of articles whose cost is subject to fluctuations on account of the war, the prices of which are fixed monthly by agreement between the British Medical Association and the Pharmaceutical Society; (3) Rules for calculating prices not fixed by the Tariff; (4) Dispensing charges, and (5) Notes for dispensers.

The rules for calculating prices not fixed are very precise. For solids purchased in half-pound quantities or more, the pound cost is taken and divided by eleven, and this gives the Tariff charge for one ounce. This amount is divided by seven to find the charge per drachm, and that amount by fifty to find the charge per grain.

In the case of drugs purchased in small quantities (avoirdupois ounces), four-tenths of the cost is added to find the Tariff charge for a troy ounce, and this amount is divided by seven and the quotient by fifty as before, to ascertain the charge for a drachm and a grain.

For liquids, such as Tinctures, etc., where the sp. gr. is not greater than water, the listed price is divided by twelve, to get the tariff for one ounce; that, is divided by seven to ascertain the tariff for a drachm and that, by fifty to find the charge for a minim. For heavier liquids, such as Syrups, etc., the divisors are 9-7-50, respectively.

Dispensing charges are allowed upon all liquid preparations prescribed for internal or external use as medicines, but, in some districts, dispensing charges are not

allowed for extract of malt, fluid magnesia, glycerin, lime water, turpentine and certain fixed oils; nor is an emulsion fee allowed for cod liver oil or petroleum emulsions.

The dispensing charges allowed are as follows:—For preparations up to eight ounces, 2d.; over eight ounces, 3d; Stock mixtures, one-half this amount; for pills, capsules, lozenges or tablets not on tariff, for one dozen, 3d. (6 cents); and for each dozen or fraction of dozen extra, 1d. (2 cents).

For powders 1 to 6, 2 pence; 7 to 12, 3 pence; and for each dozen or fraction of a dozen extra, 1 penny; if placed in cachets, 1 penny a dozen extra. Suppositories, pessaries and bougies, not on tariff, for one-half dozen, 4d. (8 cents); a dozen, 6d. (12 cents).

A fee of 1 penny (2 cents) each is allowed for copying prescriptions. The charge for containers is fixed at 1 penny to 3½ pence, and these amounts are to be deposited by the insured person and refunded to him when the container is returned.

If a prescriber fails to justify himself in prescribing in an unnecessarily expensive manner, the excess cost of such prescribing is deducted from the next payment made to him. Extravagant prescribing may consist of (1) expensive items; (2) high general average cost of prescriptions, and (3) high average number of prescriptions per insured person.

Physicians are allowed to dispense only in emergencies and in such cases he is allowed 6d. (12 cents).

It is to be noted that the Board of Customs and Excise permit chemists to dispense methylated spirit in liniments or lotions prescribed by panel-doctors, the Panel Regulations stating that "When aconite, belladonna, soap and compound camphor liniments are ordered on National Insurance forms, methylated liniments are presumably intended and should be supplied."

When Aqua is ordered without further qualifications, ordinary water is to be used. If proprietary galenicals or chemicals are ordered they must be dispensed, —no substitutions are allowed.

The amount of compensation paid physicians seems to be largely in excess of that paid to druggists. The statement is made in the Pharmaceutical Journal that a physician having 1000 patients on his Panel will receive £300 ($1500.00) a year for his attendance.

The committees in some cases seem to be unable to pay the bills of the chemists promptly. One druggist informed the Glamorganshire Insurance Committee that unless they paid him his bill amounting to more than £100, ($500.00) he would be obliged to file a petition in bankruptcy, and in Liverpool it is reported the chemists are likely to have to face a deficit of about £5000, ($25,000.00) and in London the estimated deficiency was about £46,000, ($230,000.00).

From many of the other districts the reports were not favorable as to the operation of the laws and in most districts the payment of bills had been deferred.

Some trouble would appear to have developed in pricing accounts also, for in one of the Journals appear two advertisements of persons who will assist druggists to price their prescriptions properly.

It may fairly be presumed that under the regulations of the insurance act, none of the Panel Chemists of Great Britain will become millionaires from the results

of their activities under this act. The allowance for dispensing seems exceedingly low in all cases.

American druggists would not care to dispense two dozen powders for eight cents, or to make a dozen suppositories for twelve cents. Just what our British *confreres* think of the operations of this insurance is shown by the following communication to the Pharmaceutical Journal and is interesting, for it is possible that some of our legislators may attempt to introduce some such legislation into this country or into some of its political sub-divisions.

"But what does the pharmacist get? Suppose he receives a prescription for bicarbonate of soda—two drachms (he must know how this is prepared and what are the possible impurities); Liquor Bismuthi, four drachms (he must be acquainted with the method of preparation, with pharmacopœial doses, and with the principles of pharmaceutical testing); tincture of nux vomica, one drachm (the poisons schedule must be at his finger-tips, and the processes of maceration and percolation, and the use of different strengths of alcoholic menstrua must all be known to him; the extraction of alkaloids and the natural order, habitat, and properties of medicinal plants form a further part of the knowledge he must possess in order to practise his simple duties); syrup of orange, half an ounce (how many different kinds of sugar are there? How are they distinguished and how is the specific gravity of a liquid obtained?); infusion of gentian, to make six ounces (how is an infusion made and how does it differ from a decoction?) This simple process of dispensing also involves other questions, such as standards of weights and measures, the translation of Latin names and directions, incompatibilities, dosage, etc., etc., and when the pharmacist has completed his work, exercised his skill, and supplied the insured person with a bottle of medicine correctly compounded *secundum artem* he receives as a reward, in addition to the cost price of the ingredients he has used, the magnificent sum of twopence. Shade of Galen! It reminds one of the urchin who restored a lost article of considerable value to its owner and received in return a halfpenny, with the injunction, 'For heaven's sake don't go and make a beast of yourself!'"

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HENRY H. RUSBY, M. D.

Dr. Rusby was born in Franklin, N. J., April 26, 1855. His father was a country merchant of that place and in its primary and grammar schools young Rusby began his education.

When he had reached the age of twelve years, his father gave up business and retired to a farm, where the son assisted him in the agricultural work. Having ambition to become educated he exhausted the capacity of his home district for education and then went to Massachusetts where he attended the Westfield Normal School of that state. He then entered the Centenary Collegiate Institute of Hackettstown, N. J. After graduation from this institution he became a teacher at Roseland, N. J.

While occupied in pedagogical work he used his spare time in the study of Botany, and he made an herbarium which contained nearly all the flowering plants and ferns of Essex county. This was exhibited at the Centennial Exhibition of 1876 and gained for its maker a medal and a diploma.

In 1880 he was an agent of the Smithsonian Institution and roamed New Mexico for eighteen months in its service. In 1883 he was engaged by Parke, Davis & Co. to study the medicinal plants of Arizona. In 1884 he was sent by them to South America to study the coca industry, cocaine just then coming to the front as a remedial agent of value. He crossed the continent of South America from the Pacific to the Atlantic, taking eleven months for the trip. It was on this trip that the medicinal value of Cocillana was first brought to light. He brought back from this trip 45,000 specimens, representing some 4,000 species, a fifth of which were previously unknown to botanists. On his return to New York he submitted a plan to the Pan-American Medical Congress for a systematic examination of American Flora, which plan was adopted and Dr. Rusby became the Chairman of the Commission appointed to do that work.

In 1896 he explored Venezuela for botanical specimens and made a large collection of plants. In 1888 Dr. Rusby became Professor of Botany, Physiology and Materia Medica in

the College of Pharmacy of the City of New York, and in 1898 he assumed the Chair of Materia Medica in the Bellevue Medical College.

He has contributed largely to botanical literature and was one of the active promoters of reform in botanical nomenclature, upon which his name is indelibly impressed by the fact of its use as Rusbyii in the formation of many titles of plants. He wrote the monograph on Cinchona for the United States Dispensatory and besides other writings he has published several books, among which is his Manual of Botany. He is also one of the authors of the Standard Dispensatory.

In all of his eminent labors as a botanist and a pharmacologist Dr. Rusby has been handicapped by defective eyesight, a fact which was not recognized until he became a medical student.

In 1906 he became the expert adviser of the Department of Health in New York and in 1907 he was appointed Pharmacognosist at the port of New York. In this work he has encountered much opposition and misrepresentation regarding which Dr. Rusby says:—

"Had we not been interfered with by others, there would at no time have been any occasion for antagonism on the part of any portion of the drug trade, unless there had been some one who was determined to defy or evade the plain intent and provisions of the law. When it became clear to me that a conspiracy existed between certain adulterators and misbranders without and some others within the Department of Agriculture to misrepresent Dr. Wiley and to destroy his reputation, as a necessary preliminary to destroying the efficiency of the law, I communicated the facts in my possession to President Roosevelt, which act ultimately frustrated the projects of the conspirators. This action I took alone, and quite without the knowledge of Dr. Wiley or anyone else in the department. Nevertheless, it was assumed by the enemy that a number of us were associated in the procedure, and each of us was marked for destruction.

"The following incident will serve to illustrate in part the methods employed to accomplish this end: In my letter to the President, I had gone fully into the views of Dr. Kebler and myself as to the proper treatment of importers and dealers. I explained that it was our view that when the purpose of the law and intent of the Department were fully understood, the trade generally would not only meet the requirements but would interest themselves in the work of reform and would coöperate with those conducting it. We therefore held that it would be neither just nor wise to try to see how many offenders could be caught and punished, but that our best efforts should be devoted for some time to instructing dealers as to the requirements and to getting them interested in us. In due course this letter was submitted by the President to a member of the board of food and drug inspection who was bitterly hostile to Dr. Wiley. Some time later this man took occasion to write to Dr. Wiley that I had, in a letter to the President, accused him of entering into an arrangement with importers by which they were to be permitted for a time to violate the law. But for the wisdom and courage of Dr. Kebler in acquainting me with this action, Dr. Wiley might never have been relieved from the impression of this extreme of treachery.

"In spite of all conflicts within and without the Department, I have now no doubt that the drug trade generally has come to understand that drug inspection, at the port of New York, is conducted legally, justly and impartially, and in a sensible and practical manner."

Dr. Rusby joined the A. Ph. A. in 1889 and after serving in many subordinate offices became its president in 1909.

He resides in the Forest Hill section of Newark, N. J., with his charming family of wife and three daughters.

In closing this sketch we cannot forbear quoting the words of an esteemed contemporary:

"His genius for discovering the motives and his courage in attacking the course of those who are guided by policy rather than principle have made him respected by all who know him and feared by those whose armor is sham and whose weapon is deceit. With all his knowledge Dr. Rusby is not pedantic; and with all his devotion to duty he is not austere; on the contrary, he is as simple-mannered, approachable, urbane, frank and friendly a man as one could wish to find for a friend and companion."

Book Reviews

The Examination of Water, for Sanitary and Technic Purposes, by Henry Leffmann, A. M., M. D., Ph. D. Professor of Chemistry in the Women's Medical College of Pennsylvania and in the Wagner Free Institute of Science; President of the Engineers' Club of Philadelphia (1901); Vice-President, Society of British Public Analysts.

Seventh Edition, revised and enlarged with illustrations. P. Blakiston's Son & Co., Philadelphia. Price $1.25.

This book is one most instructive to all interested in water-supplies, particularly to those having connection with the supply of potable water to cities.

It gives a very interesting short account of the water supplies of the ancient cities of Rome, Athens and Jerusalem, in which is corrected the prevalent error that Roman engineers did not possess knowledge of the fact that water rises to its original level.

After classifying the diverse waters which the sanitary chemist is obliged to handle in his investigations, it treats in detail the analytic operations for the determination of their purity and availability for use and also for their purification.

This, the seventh edition has been extensively revised and the procedures brought into general agreement with those recommended by the American Public Health Association and gives particular attention to processes devised by American Workers in substitution for those of foreign origin.

The Book of Prescriptions, with Notes on the Pharmacology and Therapeutics of the More Important Drugs, with Index of Diseases and Remedies, by E. W. Lucas, F. I. C., F. C. S., with an introduction by Arthur Latham, M. A., M. D., F. R. C. P.

Tenth edition. P. Blakiston's Son & Co., Philadelphia, Pa. Price $2.50.

This book aims to supply the defect in present-day medical instruction in its lack of training in prescription-writing and is admirably calculated for its purpose. It informs the medical practitioner of the correct manner of prescribing drugs and gives their proper combinations in order to produce palatable and efficient preparations.

It is a particularly valuable work to be in the hands of every senior student in his work in the hospital, but it is also well devised for the use of every physician who has not received the benefits of a pharmaceutical training and the actual dispensing of drugs.

The Book of Pharmacopoeias and Unofficial Formularies, containing the formulas of the British, United States, French, German, and Italian Pharmacopœias, together with formulas from unofficial sources, as the British Pharmaceutical Codex, the National Formulary of the United States, the Pharmacopœias of the London Hospitals, etc., the whole comprising about five thousand formulas, by E. W. Lucas, F. I. C., F. C. S., Pharmaceutical Chemist and H. B. Stevens. F. I. C., F. C. S., Pharmaceutical Chemist.

P. Blakiston's Son & Co., Philadelphia, Pa. Price, $3.00

In this book an effort has been made to group in a simple comparative form the formulas contained in the authorities mentioned in the title and the work will be found most useful for practical pharmacists desirous of securing such information. In addition to this information there are descriptions of the different processes of the exhaustion of drugs, a Materia Medica table giving the foreign synonyms for drugs; alcohol and thermometric tables and the relations of metric and imperial measures. The book should be a most useful addition to the library of every pharmacist.

The Detection of Poisons and Powerful Drugs, by Dr. Wilhelm Autenrieth, Professor of University of Freiburg, i. B., translated from the completely revised fourth German edition by William H. Warren, Ph. D., Professor of Chemistry in Wheaton College. (Illustrated.)

Fourth edition. P. Blakiston's Son & Co., Philadelphia. Price $2.00.

The introduction of new matter and certain re-arrangements of the text make this, the fourth edition of this work quite a different work than previous editions.

The new matter added is of especial value, treating as it does particularly of special methods of analysis. The work divides the toxic and potent substances into three groups:—those which volatilize without decomposition when treated with steam; those which are non-volatile under the same conditions; and all poisonous metals; and the directions given for the treatment of each of these classes is exhaustive.

In addition to this, Chapter IV treats of poisons not in the three groups enumerated; Chapter V treats of Special Qualitative and Quantitative Methods; Chapter VI,—the Quantitative Estimation of Alkaloids and other principles and Chapter VII treating on Carbon Monoxide Blood, Blood Stains and Human Blood.

Students of Pharmacy will find Chapter VI useful in its treatment of drug assaying.

The translation of this German work into English, Spanish and Italian attests its value.

Papers Presented to Local Branches

THE BRITISH PHARMACOPŒIA, 1914.*

M. I. WILBERT, PH. M.

The appearance of a new edition of the British Pharmacopœia immediately before the publication of the revision of our own Pharmacopœia of the United States lends a peculiar degree of interest to the book and would appear to warrant a study of the characteristic features of this new Pharmacopœia. The history and origin of the British and of the United States Pharmacopœias are also interesting largely because of the fact that our own Pharmacopœia is the direct outgrowth of one of the books that were later combined to form the now official standard for the British Empire.

The British Pharmacopœia in the form in which it now appears, is a comparatively recent publication, the compilation being authorized by the Medical Practice Act of 1858 and its publication directed by the Medical Council Act of 1862 to supersede the previously published pharmacopœias of London, Edinburgh and Dublin, only two of which, the pharmacopœias of London and of Edinburgh had an authoritative legal standing.

The earliest of the British Pharmacopœias was that of the College of Physicians of London, the first edition of which was published in 1618; subsequent editions being printed in 1639, 1650, 1677, 1721, 1746, 1788, 1809, 1815, 1824, and 1836.

The first translation of the London Pharmacopœia by Culpeper was published in 1653, and is particularly interesting because of the liberal abuse of the catalogue of remedies.

The first edition of the Edinburgh Pharmacopœia was published in 1699, and this was followed by new editions in 1722, 1736, 1744, 1756, 1774, 1783, 1792, 1803, 1804, 1806, 1813, 1817, 1839, 1841.

An English translation of the Edinburgh Pharmacopœia was published by Lewis in 1748. This book reappeared in several editions and was followed by translations by Webster, Duncan, Duncan, Jr., and finally James. The translations by Duncan and Duncan, Jr., were widely used in this country and subsequently formed the basis of the American Dispensatory by Cox and of the American New Dispensatory by Thatcher. The Edinburgh Pharmacopœia itself was used as the basis for the Pharmacopœia of the Massachusetts Medical Society, published in 1808, and for the first edition of the Pharmacopœia of the United States, pub-

* Presented at the meeting of the City of Washington Branch of the American Pharmaceutical Association, January 27, 1914.

lished in 1820. The reason, no doubt, why the Edinburgh Pharmacopœia rather than the London Pharmacopœia was used in this country, is to be found in the fact that during the Colonial period and for years later many American students were sent to study medicine at the University of Edinburgh, which at that time was considered to be the leading medical school in Great Britain, if not in Europe.

The Dublin Pharmacopœia was published as a specimen Pharmacopœia in 1794, and a second edition of this specimen Pharmacopœia appeared in 1805. The first Dublin Pharmacopœia printed for circulation was published in 1807, succeeding editions being published in 1826 and 1850. The latter or third edition was apparently the first of the several British Pharmacopœias to be published in English.

The first edition of the present British Pharmacopœia was published in 1864. At the request of the Pharmacopœia Committee of the Medical Council the Pharmaceutical Society of Great Britain had delegated Mr. Peter Squire to coöperate in the preparation of the British Pharmacopœia and he served as the pharmaceutical editor of this book. As a direct outcome of his work in this connection we have his still popular "Companion to the British Pharmacopœia" which acquired a very wide circulation not only in England but throughout British possessions, and even in the United States, no less than eighteen editions of the book having appeared to date.

The first edition of the British Pharmacopœia was liberally criticized, and the opinions expressed, particularly in pharmaceutical journals, regarding it were not favorable. While it was admitted to have good qualities, serious defects of omission and commission were pointed out and a new edition of the book, edited by Mr. Robert Warington of Apothecaries' Hall, and Professor Theophilus Redwood, representing the Pharmaceutical Society, was published in 1867. An Addendum to this second edition was circulated in 1874, and the third edition of the Pharmacopœia appeared eleven years later in 1885, a further Addendum being published in 1890. The fourth edition of the Pharmacopœia was issued in 1898, and an Indian and Colonial Addendum in 1900. This Addendum, at the request of the Government of India, was published as a Government of India edition in 1901.

The present issue of 1914 is the fifth British Pharmacopœia and, in general appearance, it has much in common with the volume immediately preceding it. It contains a total of 633 pages, sixty-seven more than are contained in the fourth edition, and officializes a total of 816 drugs and preparations as against 826 described in the body of the fourth edition of the same book. The monographs or descriptions and formulas occupy 462 pages, whereas in the issue of 1898 they required only 389 pages.

The additions in the 1914 Pharmacopœia include forty-three, the deletions 168, as against eighty additions and 189 deletions recorded in the Pharmacopœia published in 1898.

The number, nature and kind of additions and deletions represented by a new edition of a pharmacopœia are usually considered to be an indication of the progress or lack of progress reflected by the book as a whole. From this point of view, the present British Pharmacopœia appears to have been rather liberally criticized, not alone in the Medical and Pharmaceutical Journals of different por-

tions of the British Empire, but also in some of the lay Journals, particularly the daily papers of London and some of the larger cities of England. It would be altogether too ambitious a task to discuss the additions and deletions in detail or to reflect even casually the criticisms that have already appeared. For our purpose it will suffice to point out that by far the greater number of the changes were involved by the inclusion in the body of the book of all but forty-five of the titles formerly in the Indian and Colonial Addendum. This rearrangement of the material also accounts for the fact that despite the very great difference in the number of official additions and deletions the number of monographs in the body of the book is only reduced by ten.

Among the additions not as yet included in our own Pharmacopœia of the United States we find:—Acidum Picricum, Adrenalinum, Barbitonum, Benzaminæ Lactas, Cantharidinum, Diamorphinæ Hydrochloridum, Glucosum, Phenolphthaleinum, Theobrominæ et Sodii Salicylas.

Among the titles not recognized in our own Pharmacopœia we find:—Methylsulphonalum for sulphonethylmethanum, or trional, and Hexamina, a newly-coined title, in place of our own Hexamethylenamine.

Among the deletions we find:—Cambogia, Cantharis, Cerii Oxalas, Cimicifugæ Rhizoma, Cocæ Folia, Crocus, Elaterinum, Ficus, Granati Cortex, Lupulinum, Lupulus, Moschus, Mylabris, Oleum Pimentæ, Piper Nigrum, Prunum, Sarsa Radix, Sassafras Radix, Sinapis, Spiritus Aetheris Compositus, Spiritus Vini Gallici, Veratrina, Zinci Sulphocarbolas.

Among the deleted galenical preparations there are:—Three Decoctions, eight Infusions, seven Plasters, eight Fluidextracts, seven Extracts, sixteen Concentrated Solutions, six Solutions, two Mixtures, three Pills, sixteen Tinctures, and eight Ointments.

Among the innovations included by the additions and deletions we have the substitution of Cantharidin in place of the formerly official Cantharides and Mylabris. This active principle is directed to be used in the making of Plaster of Cantharidin, Tincture of Cantharidin, and Ointment of Cantharidin, in place of the formerly official corresponding preparations of Cantharides.

The deletions noted include Figs, Prunes, and Black Pepper, despite the fact that formulæ for Confection of Senna and for Confection of Pepper are retained. In these formulæ the corresponding substances are directed to be "of commerce," thus recognizing the principle that the nature and character of widely-used articles is sufficiently well regulated by competition not to require further definition or description.

One of the more evident differences between the fifth edition and the one immediately preceding it is the omission of all reference to the Imperial system of weights and measures in the formulas of the Pharmacopœia, quantities being given in the metric system only, with the exception of the doses where, as a transitional provision the Imperial system has been retained. Despite the fact that the editors of the Pharmacopœia announced that the relation between the Imperial and the metric doses of a given preparation is that of approximate equivalents only, the preference in the statement of round numbers appears to have been shown uni-

formly to the Imperial system rather than to the metric system as illustrated by the following examples:—

	Dose	
	Metric	Imperial
Aloin	2 to 12 centigrams	½ to 2 grains
Purified Alum	3 to 6 decigrams	5 to 10 grains
Amyl Nitrite	12 to 30 centimils	2 to 5 minims
Apomorphine Hydrochloride	(By hypodermic injection) 3 to 6 milligrams,	1/20 to 1/10 grain;
	(By mouth) 6 to 16 milligrams	1/10 to 1/4 grain
Atropine	0.3 to 0.6 milligram	1/200 to 1/100 grain
Copaiba	2 to 4 mils	½ to 1 fluid drachm
Cresol	2 to 18 centimils	1 to 3 minims
Prepared Chalk	1 to 4 grammes	15 to 60 grains

In stating doses for liquid preparations the metric quantities are given in mils, a term recognized by the Board of Trade (May, 1908,) as a short official designation for the millilitre. Americans will be interested to learn that this term was originated by the late Professor Oscar Oldberg in his Unofficial Pharmacopœia, published in 1881, and it is a rather handsome compliment to a prominent American pharmacist to have the renewed suggestion to use the word mil in place of the very cumbersome "cc." or cubic centimetre, reintroduced into this country from abroad.

In connection with the doses, the editors of the British Pharmacopœia explain that while the doses given in the Pharmacopœia are not authoritatively enjoined upon prescribers, it is the duty of the pharmacist or dispenser whenever an unusually large dose is prescribed to satisfy himself that the prescriber's intention has been correctly interpreted. This paragraph would appear to put the onus of dosage on the dispenser and differs from the usage evidenced by continental pharmacopœias which include maximum doses of potent medicines: quantities to which the prescriber is specifically limited and required to note any excess so as to indicate that it is done with full knowledge of facts and not through inadvertence.

The list of articles and preparations the composition of which has been altered, includes fifty-one titles, of which seven preparations were changed to correspond approximately to those recommended in the International Agreement of September, 1906. The strength of forty-one articles and preparations has been altered materially, and of these ten were changed to correspond approximately with the requirements recommended in the International Agreement referred to above. A table is also appended recording the deviations from the recommendations of the International Agreement, the nature of the recommendations and the reason for the deviation.

The list of articles and preparations the names of which have been altered, include a total of thirty-five titles largely of botanical drugs and preparations. No material change has been made in chemical nomenclature and the familiar Latin titles have generally been retained unaltered. The preface also calls attention to

the fact that the English titles are not as a rule literal translations of the Latin titles and that only the more important synonyms have been inserted.

A table of abbreviated Latin names of official drugs and preparations of the British Pharmacopœia is included in an Appendix and has elicited considerable comment, one reviewer expressing the hope that the abbreviations included "will never be put forward as legally binding. They do not appear to be so at present, but the list should not be unnoticed; many of the abbreviations are horrible."

From the preface to the Pharmacopœia it would appear that the same or similar abbreviations are to be included in the Pharmacopœia of the United States, and that the list was included in the British Pharmacopœia in the interest of international uniformity, with the suggestion that they "will probably be found useful to dispensers and others, especially those in foreign countries who have to interpret the abbreviations according to the prescriptions of British practitioners."

The monographs and descriptions of chemical substances are interesting because of the frequent occurrence of a purity rubric and of a modification of that portion of the paragraphs in former issues which purported to be descriptive of the sources or modes of manufacture of official chemical substances. These descriptions have been made more concise, but the physical and chemical characteristics and tests by means of which the substances may be identified and their freedom from impurities determined have been amplified and increased in number.

The quantitative tests for the basic and chemical radicles of ordinary salts instead of being repeated in the text as in the previous edition, or in our own Pharmacopœia of the United States, have been brought together connectedly in an Appendix, the text simply stating the names of the radicles or other combinations which should be present or absent. Infrequently applied tests are as heretofore included in the monographs themselves.

A quantitative limit test for arsenic and a table showing the limits of arsenic in parts per million, also a quantitative limit test for lead with a corresponding table showing the limit of lead in parts per million are given in the Appendices which also include methods for the general determination of acid value, saponification value and iodine value of fixed oils, fats and other products, the determination of esters and of alcohols in volatile oils, the determination of boiling points, melting points, refractive index, optical rotation and specific gravity of official substances, also methods for making extractive preparations, dyes, lozenges, alternative preparations sanctioned for use in tropical countries and a definition of the permissible limit of error in alkaloidal assays.

In connection with the descriptions of botanical drugs the histological characteristics of parts of plants officially recognized are fully described, and in many instances the histological characteristics of the powder are given, particularly when by chemical testing alone the identity or the purity of the article could not be certainly determined.

The number of assay processes for botanical drugs and for galenical preparations and volatile oils has been increased considerably, the present edition requiring the assay of thirteen crude drugs, seven of which are for alkaloids, the assay of twenty-five galenicals and of eleven volatile oils. In many instances the official processes for the assay of drugs and preparations have been revised in accord with

the recommendations of the Reference Committee on Pharmacy of the Pharmaceutical Society.

In connection with the volatile oils and fixed oils, additional tests for identity and purity have been introduced, the characters and tests ordinarily including in addition to requirements for color, odor, and specific gravity, also optical rotation, and, as noted above in many instances, an assay method for the determination of the more important constituents.

Unusual methods of administration have not been specifically recognized and apart from a note by the editors in the preface to the Pharmacopœia that "when official drugs are so directed by the prescriber, the drugs of the Pharmacopœia may be dispensed in non-official forms such as capsules, cachets, granules, compressed discs or tablets, and the like; but the drugs themselves, in all such cases must respond to the official characters and tests."

An index of forty-seven pages makes the book and its contents readily available for reference purposes, and altogether the opinion expressed by the editors of the Pharmacopœia that the Pharmacopœia Committee of the Medical Council, "has now been able to produce a British Pharmacopœia suitable for the whole Empire," appears to be reasonably justified.

MODERN DRUG STORE MERCHANDIZING.

E. FULLERTON COOK, P. D.

At the January meeting of the Philadelphia Branch of the A. Ph. A., Mr. Louis K. Liggett of Boston, presented an interesting and illuminating analysis of the business side of certain types of modern drug stores.

The following outline briefly reviews his treatment of the subject:

That the proper grasp of the details of business may be insured, it should be divided into departments, each being separately studied and managed and each having separate financial records. Soda water, cigars, candies, prescriptions and general merchandise are classifications which suggest themselves.

The Soda Fountain properly conducted and with careful management should and can be made to yield 50 *per cent.* gross profits. In figuring the costs do not fail to include every expense including breakage, icing, napkins, glasses, etc., etc. Here the quality of the service is of the utmost importance. Selling price is not the main consideration. People are willing to pay more for quality and right treatment.

The basis of a successful soda business is, first, ice-cream which is just right; secondly, cold liquids—10 to 15 degrees above freezing always; with these assured you have the beginning of a good business.

Cigars:—The best grade of cigars may be ruined by lack of proper care. An open door to the cigar case and a radiator behind will make "English Cigars" of the finest kind in one week, "water-logged, seasick and dried out." The cigar case should be carefully watched and be gone over at least once every day, to see

that well-filled boxes are always in sight and the proper degree of moisture is maintained.

Buy with much wisdom. Don't load up with dead brands. Here again service counts. One store in Boston, with only a nine-foot case, does over $100,000 worth of cigar business a year, against keen competition. This is only because they give unusual service. The salesmen in this store know their customers' preferences and serve them with politeness and dispatch. A good cigar business is valuable to a drug store because it brings the men's trade. Give the customer what he wants and give it quickly. Cigar sales should yield, at least, 26 *per cent.* gross profit.

Candy:—This is a rapidly growing department in many stores. There are two kinds of candy selling—in packages and in bulk. The first can be bought to yield an assured 32 *per cent.* gross profit. Bulk goods can be bought to yield, theoretically, as much as 40 *per cent.* gross profit, but in practice this always shrinks to 28 or 30 *per cent.* Why? "Because she always gives over-weight (18 ounces to the pound) and each time eats two more."

Don't sell a 60 cent candy for 80 cents. You may sell the first pound but the customer does not return. *Give full value.* Buy to make from 32 to 36 *per cent.* gross profit from candy sales.

General Merchandise:—The great problem of every business is to make the store yield a net profit. The proprietary medicine business shows a fluctuating gross profit. Where 92 to 95 cents is obtained for $1.00 goods it is possible to make from 32 to 33 *per cent.* gross profit. When cut rates prevail the gross profit may be cut to from 12 to 15 *per cent.* or even less with an actual loss on every sale.

The expenses of the retail business in all lines has just doubled in the past twenty years. This is due to the establishment of delivery service, higher-priced clerks, increased lighting requirements, laws cutting hours for labor, etc.

It becomes necessary, therefore, to watch every detail of the business if it is to be made to yield a net profit, and if you cannot do this, get rid of it as soon as possible.

Take at least one accurate inventory. Write up each section on cards or inventory sheets, and then some night call in your friends and call it all off even if it takes all night. Then having figured what your actual gross profits have been, budget each department. For instance, if you do $100.00 of cigar business a month and you find through careful records and your inventory that you have been making 20 *per cent.* gross profit, limit your purchase to exactly $80.00. If you can do the same business ($100.00 worth) that month, you can be sure of the 20 *per cent.* gross profit. On the other hand, if stock becomes short you will know that something is wrong and will be interested enough to investigate.

Start with one department, study it in this way and budget it, as suggested, and you will soon be so interested and so greatly benefited, that you will find it possible to treat all departments in the same way.

Every business should be analyzed and studied, and made to conform as nearly as possible to carefully outlined plans, which insure a profit. The following illustration serves as a model, and although subject to slight variations, depending

upon the nature of the business, it yet affords a basis for comparison which should be helpful to every man engaged in the drug business:

Assuming that the sales are $3000.00 a month, and stating all *per cents* as *per cent.* of the total sales, then:

Total sales	$3000.00	100 per cent.
First cost of goods	2000.00	66⅔ per cent.
Gross profit	$1000.00	33⅓ per cent.

From this $1000.00 must now be paid all expenses, and from it must also come the net profit, if any is to be made. It should be divided about as follows:

Rent, heat and light (the only fixed charges)	$ 210.00	7 per cent.
*Clerk hire	360.00	12 per cent.
Advertising	60.00	2 per cent.
All other expenses	120.00	4 per cent.
Net profit	250.00	8⅓ per cent.
	$1000.00	33⅓ per cent.

For a business of this size, budget yourself to buy only $2000.00 of goods a month and you will have $1000.00 in bank for expenses and profit. You should spend 2 *per cent.* of your sales for advertising if you would retain your business and slightly increase it, but be sure the advertising is judiciously done and in such a way that it pays.

Always put your detailed expenses down in black and white and study it. Freight on goods should go to expense and should not be added to cost of goods. You will then soon eliminate it by buying the same goods in some other way without freight cost, or else make the other fellow pay the freight. If your electric light exceeds your limit set for that expense, you will immediately want to know the reason why, and so each expense item will come up for study and analysis. Remember your net profit depends upon keeping expenses down.

To conduct a business of this amount how much capital is necessary? The location makes a great difference, and the kind of goods sold is also an influence. You should aim to make at least four turn-overs of stock every year. Don't allow general merchandise to remain on the shelf; if anything, not a staple, proves to be a slow seller, get rid of it through a special sale. By turning stock at least four times on the average each year, a $3000.00 a month business would require a capital of about $6000.00 for fixtures and $8000.00 for stock; a total of $14,000.00. If the turn-overs can be made more frequently less capital is necessary; if less frequently, a larger capital will be required.

*If a large part of the business is in the prescription department, the per cent. of expense for clerk hire will increase, but the first cost of goods will proportionally decrease.

THE SALE OF POISONS.*

WM. MITTELBACH, PH. G.

The sale of any poisonous substance is always connected with more or less responsibility by those engaged in its distribution; and the legal restrictions placed about such sales are fairly well designated in our state law. Our law in this state (Missouri) is about as clear and complete as in most other states; and the list of poisons recognized under schedules A. and B. as extensive as in other states. Massachusetts' law sets out the most complete and extensive list and is a drift in the right direction. This, in my opinion, is a better law, and throws more safeguards about the sale of poisons. I hold that all substances that are of a dangerous or poisonous nature should be registered—their distribution or sale, I mean. As the Missouri law now stands, only a few of the most potent or powerful drugs or chemicals must be registered; while a long list of less potent, yet of dangerous character, can be distributed or sold almost *ad libitum*—the only requirement being that the purchaser be informed of their dangerous or poisonous character.

We all recognize that all drugs are more or less potent—otherwise they would have but little therapeutical value. Then why draw a line anywhere in controlling their sale to the laity? I, therefore, hold that no distinction should be made in listing substances sold by the pharmacist as "poisons" or "poisonous substances"; but that the sale of all should be placed upon the poison register. The argument that poisons should only be distributed through the physicians, and upon their written order, is rather weak and impracticable. The licensed pharmacist is better qualified to guard the sale of poisons than is the average physician. He, being directly responsible for the distribution of poisons, will naturally watch more carefully their sale.

The registration of all poisonous substances involves very little additional trouble and will simplify the whole matter. As new drugs, chemicals or substances are brought into use, they, if of a dangerous or poisonous character, can be added to the list. Such a change in our law will be beneficial, and simplify the sale of poisons while it will add to the pharmacist's protection.

COMMERCIAL PHARMACY—A TIMELY TOPIC.*

ALFRED W. PAULEY.

We are living in a day and age when we are obliged to recognize commercial pharmacy as a very important factor. First of all, let us consider the definition of commercial pharmacy. One of the best definitions that I can mention is this:—Commercial Pharmacy is a science that treats of mercantile transactions pertaining to pharmacy, or it may be defined as the business-end of pharmacy.

If it is true that commercial pharmacy represents the business-end of pharmacy,

* Read before St. Louis Branch, January, 1915.

then we must recognize it and admit it into our professional ranks, in the colleges as well as the drug stores. It was my pleasure, not so very long ago, to listen to several very prominent addresses made before a body of men and women who were gathered in St. Louis for the purpose of promoting social, professional, educational and business interests. These men represented many states of our great country, and are noted the world over for their professional, chemical and pharmaceutical knowledge. One of the speakers in his address made a comparison of pharmaceutical classifications, which was divided into two classes; one whom he said studied pharmacy with a view of making it a profession, while others studied with a view of making it a vocation. He seemed to lay special stress on the professional student overlooking the importance of commercialism, which to my mind is absolutely essential in pharmacy to-day. In order to make a pharmacy successful professionally, we must use commercial methods. Now let us consider one of the causes for adopting commercial pharmacy. Can any one of us run a drug-store to-day as our forefathers did? We may but look back, to the days in which the professional pharmacists ruled and governed pharmacy, and before the time of the existence of the department-stores and commercial drug-stores; and we must give those men credit for running apothecary shops in an ideal manner; but isn't it likewise true that all progressive professional and commercial enterprises have applied themselves to the modern-day methods due to the vast changes that were forced upon them? Let us consider some of the reasons that caused us to take up the commercial end of pharmacy. We may, individually, remember that a diphtheria case in the neighborhood of our drug-store would result in considerable prescription work for the patient, and, usually, the patient required medicine daily for two, three or possibly four weeks. To-day one injection of diphtheria anti-toxin is sufficient in most cases. Thus the prescription trade is not obtained. Besides this, we have a number of other diseases which now are treated by the use of Vaccines, Bacterines, Phylacogens, Salvarsan and the like. Furthermore, we, to-day, have Christian Science, faith healing, the Fletcher System, Physical Culture, Psychology and many other things of similar nature that deprive the pharmacists of the prescription business that he formerly enjoyed. With this condition apparent, isn't it true that the commercial departments in the drug-store of to-day help reduce the prices that we would be obliged to charge for prescriptions had these commercial departments not been established, or in other words, the commercial departments have a tendency to cut down your overhead expense. Furthermore, let us consider with all due reverence to the professional man of former days, and ask this question:—Has he achieved success financially?—Has he reached his ideals? If he has professionally we must honor him. We, however, must have more than this professional ideal in mind, especially if we have families to support, or other obligations to meet, and therefore in order to make a financial success "which in my mind is absolutely essential," we must combine commercial pharmacy with professional pharmacy and get the professional educators willing to coöperate with us. Then combine their ideals and we will have commercial professionalism or professional commercialism as the one ideal for which to strive. There is a difference between commercial pharmacy and commercialized pharmacy. Commercial pharmacy, as its name implies, is the trading of commercial products for the benefit of the public

as well as for profit; while commercialized pharmacy, in my mind, would represent trading for the profit and disregarding the public. Commercial pharmacy has been scorned by a great many professional pharmacists, but I want to tell you that the commercial pharmacist is just as honorable and upright in his dealings as the professional pharmacist, and if this is true, then let us get together and make commercial pharmacy one of the important factors of the twentieth century, or sooner or later, we will have the universities encroaching upon the rights of the regularly instituted colleges of pharmacy and take from them that which they have worked so hard to build up.

Let us consider the words of Cicero, who so wisely said:—"It is not the place that maketh the person, but it is the person that maketh the place honorable." Therefore, let us follow the footsteps of Atkinson who directs us as follows:—"Put in your own mind the existing condition which you wish to become real; then see the thing as you wish it to be"; and as Alex. Bell likewise gives us this valued advice in saying "Concentrate all your thoughts on the work in hand. The sun's rays do not burn until brought to a focus." Just so, the sun's rays of commercial pharmacy will likewise not burn until brought to a focus. Feeling satisfied that most of us are in accord with these commercial pharmacy ideas, let us proceed to take up the most important steps that are necessary in making commercial pharmacy a success. Most essential is that of salesmanship. Salesmanship is the scientific cultivation of good will. Another definition is that salesmanship is honesty, courtesy, tact bound up with an interest in, and a thorough knowledge of your stock, all resolving into the art of converting a transient patron into a steady customer. All of us, possibly, have seen the illustration of salesmanship conveyed by a prosperous business man to his son as he started out in life, which bears this inscription:—"Remember, Jakey, when you sell a customer what he wants, that is nothing; but when you sell him what he don't want, that's business." Some of the most essential factors in salesmanship are first:—A salesman must have a thorough knowledge of his merchandise and not attempt to sell winter merchandise in the summer, or attempt to sell ice skates for sake of example, in the Fiji Islands.

So that the most important thing is a thorough knowledge of the goods you have for sale. He should know of what it is made, how it is made, what it is for and all that. It will go to show the customer that you are perfectly familiar with the merchandise you have to sell. A good salesman must possess, besides this knowledge of his merchandise, all the attributes of a salesman. These three particular factors are essential:—

PUSH, POWER AND PERSONALITY.

Under the head of Push comes initiative, ambition, enthusiasm and tact. He must have power to convince. The fact is, that a salesman must possess the power to make a customer feel as he does about the product he has to sell, and *this is one-half* of the battle. His personality goes a long way in making the people feel they are welcome in his store. As I once heard a customer say, "I like to go into a warm store; not a steam-heated store, particularly, but a heart-heated store. The store where the clerks act as though they were glad to see you. I like to go into a store where I feel welcome. I like to go into a store where there is no unnecessary delay when I ask for an article. I like to go into a store that is cleanly,

and these points show personality." Then he must be optimistic. The next essential that I would consider would be that of:—

HEALTH, HAPPINESS AND HARMONY.

Health, as you know, is the greatest factor in keeping business going right. Happiness is a factor that keeps your organization in good running order like good oil used on machinery will keep it running right. The employee with a grouch can spread more dissatisfaction than the boy with the measles can spread the infection in a crowded room. Harmony is absolutely essential because no store, no home or factory can really prosper unless the employees work in harmony, and the proprietor should likewise work in harmony with the help. Who should the salesman work for, and who is the boss of the store? It is the customer that you and I are working for. It is the customer that you and I are here to please. It is the customer who pays your wages and mine. If it were not for the customer, you and I would be looking for a job and we might not get one as good as the one we have. Now, if you are sitting behind your counter doing nothing, and you see a customer (the boss) coming,—Jump.

The commercial pharmacist in his commercial field has a decided advantage. A well-known physician once expressed himself thus:—"A physician renders his service to the sick, the poor and the ignorant, while the pharmacist renders his service to the well, the wealthy and the wise." He infers that we are better off and can keep in better spirits when trading with that class of people. While I am not in accord with all his statement, yet I feel, to a degree, that pharmacy has its advantages. This being the case, let us be optimistic. Let us put on the smile of the optimist and discard the smile of the pessimist. Go forward to make every day count and if possible make some of them count for two, and let us not put anything in the way of the advancement of commercial pharmacy as we do not know how far-reaching it may be. Be kind to your fellow neighbor; do good whenever you can.

Remember the words of A. B. Hagemann which reads as follows:—"I shall pass through this world but once. Any good, therefore, that I can do or any kindness that I can show any human being, let me do it now. Let me not defer or neglect it, for I shall not pass this way again."

THE CULTIVATION OF MEDICINAL PLANTS IN THE UNITED STATES.*

F. A. MILLER.

The cultivation of medicinal plants in the United States is only in the very earliest experimental stage. Whatever may have been done toward investigating the peculiarities of growth of this class of plants, has so far had little influence upon their commercial production. With the beginning of the work of the United States Department of Agriculture on the cultivation of these plants and the interest shown by colleges, scientific societies and commercial institutions,

* Abstract of an illustrated lecture delivered before the Chicago Branch, November 17, 1914.

our knowledge of the behavior of a number of the more important ones has gradually increased until we feel more confident of success. To the many inquiries upon the possibilities of success, however, we must still reply in a cautious and conservative manner. This attitude is advisable and indeed necessary for several reasons. To enumerate, a druggist, doctor, farmer or other individual wishes to engage in the commercial cultivation of medicinal plants. Their questions usually come in the following order:—what to grow, what species used, where to obtain authentic, viable seeds, how and when to plant, on what type of soil, when and how to harvest, what part or parts of plant used, how cured and packed, principal markets, prices paid, and annual consumption? Apply this series of questions to any one of the more valuable drug plants such as digitalis, belladonna, henbane or cannabis, and who among us cares to undertake the task of answering them? It is true that these are the very questions that are under investigation, but as yet only a beginning has been made toward their solution. Taking up these problems in their logical order, we find that they fall into certain classes.

The first of these classes includes all the problems of propagation. This involves the sources of seed and plant supplies and the accuracy of names, methods of seeding, as to whether or not open-field sowing can be practiced or the necessity of greenhouse accommodations in carrying the plants through the earlier stages of development. Vegetative methods so commonly employed by gardeners and florists are little used with medicinal plants. It is one form of this method that has proven so successful in the propagation and re-setting of peppermint and spearmint. The second class of problems to be solved is that pertaining to the manner of cultivation. This includes duration of growth requisite for a harvest, whether annual, biennial or perennial; nature of tillage, as to the use of hand or power labor; types of soils and fertilizers and their influence, both upon the production of crude material and the relative percentage of active principle. Following the natural order of procedure, class three covers the operations of harvesting. The nature of these operations varies widely according to the character of the part of the plant used. Roots, seeds, leaves and flowers involve as many operations and, what is of considerable importance, usually require special types of machinery or much expensive hand labor not common in regular agricultural practice. Concerning the time of harvesting these various parts, little is known of the seasonal variations of the active principles. The process of curing represents the fourth class of operations to be considered. It is self-evident that medicinal plant products cannot be cured in the same manner or by the same methods as agricultural crops. A crop of digitalis, or stramonium, cannot be harvested and cured with the same ease and rapidity as a crop of corn, oats or wheat. Handled in large quantities, these drug crops would all require a special equipment in the form of drying sheds, cutting machines, etc. At this point the time of harvesting is in question. When should the various classes of drugs be gathered in order to show the greatest medicinal value? We are all familiar with the wide variations exhibited by plant products as the plant progresses from the earliest stages of growth to maturity, and whether it is an alkaloid, a glucoside, a resin or what not, there is some stage in the life history of the plant when these products are present in greatest quantity. While this

has been determined to some extent for a few forms such as belladonna, stramonium and bloodroot, there is still much to be done before we can say just when a plant or plant part should be collected, in order to give the best product in proportion to the highest yield of crude material.

Thus it is evident that the whole problem of drug cultivation is still one of experimentation. That it will pass this stage successfully, especially with reference to the most essential vegetable drugs, we have little doubt. This success, however, will probably not fall to the lot of the farmer or layman. Little assistance can be expected from those people in solving the many-unsettled problems. As with the average drug collector, they see little necessity in the careful preparation of materials going to make up pharmaceutical preparations. On the other hand, it is their opinion, as well as that of many others, that medicinal plants will grow and thrive without any care or attention. In this respect, I know of nothing better to say to the beginner in drug-growing, than that medicinal plants do not grow and flourish, out of an impossibility to do otherwise, but that they have an excuse for living and growing, in that they respond to the same selective agencies as other economic forms and exhibit during their life history, a delicacy of balance, with reference to their active constituents, so essential that an error of a few days in harvesting and curing may turn success into failure. The mere fact that a form grows commonly about the fields, or appears as a troublesome weed in and about farm lots, or may be grown with comparative ease as a decorative or garden form, does not necessarily indicate that it will behave in a similar manner under field conditions. Indeed, this is rarely the case, and close observations will reveal the fact that most of our native wild forms are growing under an environment not at all comparable to field conditions as interpreted in terms of agricultural science. Too many recommendations based solely upon back-yard observations, have already been made for growing certain medicinal plants. Also, a too liberal spirit has been shown by some in the selection of forms best adapted for cultivation in this country. In my mind this number should be comparatively small and, even under the present market conditions, should not include more than twenty-five drugs, some of which are, aconite, belladonna, burdock, calendula, chamomile (German and Roman), cannabis, colchicum, conium, convallaria, digitalis, goat's-rue, hydrastis, henbane, larkspur, marshmallow, pulsatilla, rue, savin, stavesacre, stramonium, and wormwood. A clear understanding of these forms as to species used, methods of propagation, systems of seeding, cultivating, harvesting, curing and packing, should be had before attempting to make recommendations for their commercial production.

Taking up the question of drug-growing from another viewpoint, let us consider the possibilities of improvement from the stand-point of plant-breeding. We should not be satisfied with merely growing and domesticating these wild medicinal plants, but should so improve them through selection, hybridization and the testing of different species, varieties and strains, that better and more uniform crude products can be obtained. In attempting to thus improve medicinal plants, we are not attempting a new problem. We are only applying old and well-tried principles to new forms. Who of you, would at this day and age, turn to the woods and fields for plants of the strawberry, raspberry, blackberry, plum or a host of others, with which to re-stock your gardens and orchards? The idea of

wild, native ancestors for all economic plants in existence, rarely occurs to the layman and if so, it is quickly dispelled by the ever-ready nurseryman to supply him with new and improved varieties especially adapted to certain soil and climatic conditions. These varied forms have added much to our daily health and pleasure. Our eyes are delighted with the beauty of form and color of some favorite fruit, and our appetite appeased by a flavor so fitting to our individual tastes as not to be possessed by any other variety in existence. And so, in health, we enjoy the products of the plant-breeder, while, in sickness, we are subject to all the variations and imperfections of nature, in the use of products obtained from plants of unknown parentage and growing under conditions so adverse that their life history is one continued struggle for existence. Why not treat disease, in so far as botanical drugs are involved, with preparations derived from carefully selected, and improved strains, grown under controlled conditions and in such a manner that greater uniformity and high quality would be insured? We should have a strain of belladonna testing six- or seven-tenths of one *per cent.* of alkaloids instead of three-tenths, a strain of henbane which could be collected and cured in such a manner that barn-yard refuse could be eliminated, and assaying one-tenth of one *per cent.* instead of the now almost impossible seventy-five thousandths of one *per cent.* With stramonium a strain has been developed, which last year tested seventy-four hundredths, as compared with wild plants of the same locality which tested thirty-four hundredths. *Digitalis lanata* has shown in preliminary tests, an activity much greater than the official species. True, this activity may not be due to the same active constituent, or combination of constituents, as that of the species *purpurea*, but the fact that there does exist a more toxic species than the one in common use, indicates the necessity for investigation and the possibility for the plant-breeder to develop an improved strain. And so we might continue to take up the various phases of the problem, as to the possibilities of developing annual strains of such forms of biennials as digitalis, henbane, conium, etc., and the influence this would have upon the success of commercial production. In this respect the standards of the pharmacopœia must be reckoned with. These standards must be the guide of the prospective drug-grower, for, in many instances, they, in themselves, point out the many difficulties to be overcome if the proposition is to be a profitable one. For instance, the present pharmacopœial requirement for digitalis, includes only the leaves from flowering plants. This plant is almost strictly a biennial, meaning that land must be occupied two successive years by the plant before a harvest is realized. It is also a plant that cannot be seeded by open-field methods, but must be started in the green-house and transplanted. The question immediately arises as to the advisability of recommending this plant for cultivation. With belladonna and stramonium, only leaves are official, while it has been found that the stems of both of these plants contain at certain stages appreciable quantities of alkaloids. If the whole above-ground portion of these plants could be used, it would greatly facilitate the operations of harvesting and curing and at the same time materially increase the yield of crude material. Also, only the species *Datura stramonium* is now official, while it is known that the species *Datura tatula*, which is more common in this locality, contains as much and in some instances even more alkaloids. While some may claim that the alkaloids of these two plants are not identical, still

their close botanical relationship and the fact that we have evidence that European stramonium leaves are many times probably a mixture of these two forms, strengthens the assertion that there is little difference in their therapeutic value.

And so we might continue to take up the various problems of drug cultivation, together with their probable solutions, but space will not permit. In conclusion, therefore, it should be clearly understood that these problems are not simple ones and those undertaking their solution should bear in mind that the cultivation of medicinal plants involves more than merely allowing crops of weeds to grow in spite of themselves, in cutting them down when most convenient, pulling them out by the roots or otherwise, and quickly transferring them to the manufacturer who will be waiting with open hands to receive them at fancy prices. It has seemed advisable, therefore, to recommend to those interested in drug-growing, that they begin on a small scale with a few of the most promising forms, and that they be so situated and equipped that they can carry these through an experimental stage, developing their method of propagation, seeding, harvesting, curing, etc., before attempting any operations upon a commercial scale.

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CAN THE PHARMACOPŒIA AND THE NATIONAL FORMULARY BE MADE POPULAR WITH PHYSICIANS?

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Time and again has the idea been expressed that physicians as a class do not take enough interest in the Pharmacopœia and the National Formulary. As the truth of this proposition is quite generally admitted, it is probably unnecessary to adduce proofs in support of the assertion. All will agree that it is desirable to make these formularies popular with physicans. The question is: Can it be done?

In an article entitled: "Why physicians do not read the Pharmacopœia," Dr. Chambers (1) summarizes the reasons as follows: First, the physician fully trusts the application of its information to the pharmacist without question; and, secondly, the information the physician seeks for practical application by himself is not contained in the book. So little, indeed, of practical value to the physician is to be found in the book, that we might fairly raise the question: Why *should* physicians read the Pharmacopœia? An additional reason for the indifference of the physician toward the Pharmacopœia is the impression forced upon him that the Pharmacopœia is non-progressive; for nearly every mail brings to the doctor cleverly worded advertisements for proprietary medicines, all of which, no matter how varied their nature, agree in one respect, namely in claiming directly or indirectly, that they represent a decided advance or innovation in respect to the Pharmacopœia.

Now what can be done to make the Pharmacopœia more popular with those for whose guidance chiefly the work is published? Should we attempt this by intro-

ducing information on pharmacodynamics and on therapeutics? Assuredly not, for the Pharmacopœia is a book of standards. Or should we introduce into it the latest and the untried; sacrificing its dignified conservatism? Of course not. Though it is a fact that the Pharmacopœia contains only well established and much used drugs and preparations, it is unfortunately also true that doctors do not look upon this book as a guide for the determination of the value of medicaments. It is well known that the Pharmacopœia contains articles of admittedly doubtful utility; and also that, for various reasons, it cannot contain all the medicaments of value. To limit the Pharmacopœia to drugs of undoubted therapeutic value, has been strenuously advocated of late; and, as a principle, the idea appears perfectly sound. Its application would, however, eliminate from the book many drugs that are much used, thereby lessening the value of the Pharmacopœia to the pharmacist; it would offend many of the rank and file of the medical profession, wedded as some of them are to the use of some of these drugs of doubted activity; it would probably not enhance the popularity of the Pharmacopœia, at least not for quite a time to come.

Hence it may seem an almost hopeless task to make the Pharmacopœia popular with physicians. This statement is made without questioning, in the least, the utility, aye the necessity of the Pharmacopœia; that is admitted by all physicians. The Pharmacopœia is as necessary as is our code of laws. Yet our legal statutes do not constitute popular reading, even though they are made for the people.

Nevertheless, it seems, that everything possible ought to be done to acquaint physicians with the forthcoming revision of our formularies. Perhaps one way in which this society might be of help in this direction would be by the publication of a "Commentary upon the U. S. P. and N. F. for Physicians," a booklet that would briefly set forth the facts connected with the new formularies that are of interest and importance to physicians. Of course, nearly all medical publications will give lists of the changes, the additions and the deletions that have occurred; so that a mere dry statement of the facts would not be called for. The book issued by this society might go further. It might state the reasons for the changes, so that physicians might understand why they are asked to inconvenience themselves by departing from accustomed ways of prescribing. Such commentary might perhaps also give brief historical notes in connection with important drugs and preparations; for historical knowledge is eminently calculated to inspire respect or at least an understanding for things as they exist at present. Posology, the study of doses, is a very vital matter for medical men; and the maximum doses of various pharmacopœias, minimum fatal doses wherever available, and possibly children's dosage as given by various authorities might profitably be included in such a book. A brief statement of legal enactments in connection with drugs might also be of interest. There are, no doubt, many other items of information, as, e. g., the form in which various medicaments are best and most commonly prescribed, that might be included, so as to make the book truly worth while for the physician. On the other hand, pharmacists should not presume to offer to the physician information on pharmacodynamics or on therapeutics, as these subjects are decidedly out of the sphere of the pharmacist's study.

That something can be done to popularize the preparations of the U. S. P. and N. F. has been shown by a statistical investigation carried on by the author sev-

eral months ago, by means of a *questionnaire* sent to some of the leading pharmacists of this country. An analysis of 10,000 prescriptions (2) showed that 24% of them contained proprietary medicines, which, though still too high a figure, shows a decided improvement over the figure obtained by Motter (3) in 1906, who as the result of an examination of 5000 prescriptions found 47% calling for proprietaries. This reduction in the use of proprietary medicines by about one-half may, it seems, be justly ascribed to the propaganda in this behalf carried on by the American Medical Association, through its Council on Pharmacy and Chemistry, and by the National Association of Retail Druggists. These figures mean that the preparations of the Pharmacopœia can be made more popular by propaganda. The forthcoming revision of the Pharmacopœia and the National Formulary offers an excellent opportunity for renewing them. Might not this society do its share in advancing the good cause?

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ESTIMATION OF CINEOL IN OIL OF EUCALYPTUS.*

JOSEPH L. TURNER AND RALPH C. HOLMES.

The question of an accurate determination of the quantity of Cineol in Oil of Eucalyptus is still unsettled, notwithstanding the quite considerable amount of research which has been devoted to it, and, judging from its present status, it will not be settled for some time to come. This is to be regretted the more, since it is now established beyond dispute that the value and therapeutic action of eucalyptus oils depend exclusively upon their content of cineol (eucalyptol). Various methods proposed heretofore, without exception, suffer from one shortcoming—gross inaccuracy; either due to the wrong basis of method, or to the instability of those compounds which have been suggested as serviceable for the separation of Cineol.

To the class of methods based on wrong premises belong the "Permanganate Method" proposed by Francis D. Dodge (Journal Industrial and Engineering Chemistry, Vol. IV, August, 1912, p. 529), and the "Resorcinol Method" proposed by Schimmel & Co., (Semi-Annual Report of Schimmel & Co., October, 1907); the latter method is now slated for inclusion in the Ninth Revision of the United States Pharmacopœia, and it will thus become responsible for the admission into the pharmaceutical practice of inferior eucalyptus oils, as we propose to show further below.

The methods based on the separation of unstable addition products of cineol, are:—the Phosphoric Acid method and the Hydrobromic Acid method.

The various methods mentioned will be outlined briefly, as it is not our purpose here to enter into a thorough discussion of these. Exhaustive information, both

* Presented at the November meeting of the New York Branch of the American Pharmaceutical Association, November 9, 1914.

pro and *con,* may be obtained from the literature on the subject, and especially by perusing the Semi-Annual Reports of Schimmel & Co.

1. *Phosphoric Acid Method:*—"Introduce into a beaker a solution prepared by dissolving 10 cc. of Oil of Eucalyptus in 50 cc. of purified petroleum benzin; immerse the beaker in a freezing mixture and add phosphoric acid, drop by drop, with constant stirring, until the white magma of cineol phosphate formed, begins to assume a yellowish or pinkish tint; then transfer the magma to a force filter, wash it with cold purified petroleum benzin, and then dry it by pressure between two porous plates. Transfer the precipitate (cineol phosphate) to a narrow graduated cylinder, and add warm water, which will cause separation of the cineol. The volume, in cubic centimeters, of the separated oil, multiplied by 10, represents the volume *per cent.* of cineol (eucalyptol)."

The addition product of eucalyptol with phosphoric acid, as obtained by this method, is a semi-solid sticky substance which decomposes very readily and renders a quantitative separation very difficult, if not altogether impossible. In consequence of this, the results obtained by this method are invariably too low.

2. *The Hydrobromic Acid Method* is carried out as follows:—"In a highly cooled solution (freezing mixture) of 10 cc. eucalyptus oil in 40 cc. low-boiling petroleum ether, (b. p. about 40°), *absolutely dry* gaseous hydrobromic acid is introduced until a precipitate is no longer formed. The pure white hydrobromide of cineol formed is rapidly collected with a suction pump, and washed with cold petroleum ether. Into the filtered-off liquid, hydrobromic acid is again introduced, any precipitate formed is collected separately, and then added to the bulk. For the purpose of removing the petroleum ether, the cineol hydrobromide is left standing for a quarter of an hour in a vacuum; it is then rinsed with a little alcohol into a cassia flask, and decomposed with water. The cineol separated off is brought into the neck of the flask by the addition of more water, and the quantity of the oil read off the scale. By multiplying with 10, the cineol content of the oil employed is obtained in *per cent.* by volume."

This method has the same drawback as the Phosphoric Acid method, namely, rapid decomposition of the addition product. Moreover, the procedure for obtaining the cineol hydrobromide is a very complicated one, and is not suitable, therefore, for ordinary practical purposes.

3. *The Potassium Permanganate Method* is based upon the fact, that, in the cold, cineol remains practically unattacked by potassium permanganate, whereas, the remaining constituents of the oils in question (eucalyptus oil and cajuput oil) are oxidized into soluble compounds. The process is carried out as follows:—"10 cc. of the oil under examination are placed in a narrow-necked flask, cooled with ice-water and shaken with a gradually added 5 to 6 *p. c.* solution of potassium permanganate, until the latter is present in excess. The mixture is then left standing in ice-water for from 12 to 18 hours with occasional shaking, after which the manganese peroxide which has separated out is brought to solution by means of a careful addition of sulphurous acid (or sodium bisulphite + hydrochloric acid). The unattacked oil (eucalyptol) is brought into the neck of the flask, pipetted into a graduated tube, washed with a little alkali, and estimated volumetrically. Its sp. gr. should be 0.929 to 0.930 (15°); it should be inactive, and dissolve in 3.5 vols. 60 *p. c.* alcohol at 25°."

We have not investigated this method personally, but are rather willing to ac-

cept the criticism as published in Schimmel & Co.'s Semi-Annual Reports, for April, 1913, p. 62, containing results of experiments on known mixtures of cineol with pinene and terpineol. For instance, a mixture containing 25% cineol and 75% pinene, when estimated by this method, showed a cineol content of 95%; a mixture of 50% cineol and 50% terpineol, on the other hand, yielded only 30% cineol. Time does not permit us to enter into a more complete discussion of these results.

4. *Resorcinol Method*, or more correct, *Resorcinol Methods*, since there is an *"original"* method as described in Schimmel & Co.'s Reports for October, 1907, in Gildemeister & Hoffmann's "Volatile Oils," 1913, p. 601, and as proposed for the inclusion in the Ninth Revision of the U. S. Pharmacopœia, and also a "Modified Resorcinol Method" as given in Schimmel & Co.'s Reports for April, 1908.

The "original" method is based on the fact that cineol forms an addition product with resorcinol, which is soluble in an excess of concentrated resorcinol solution.

The process is carried out as follows:—

"To 10 cc. of oil contained in a 100 cc. cassia flask enough 50 p. c. resorcinol solution is added to fill the flask about four-fifths. For five minutes the mixture is thoroughly shaken, and then that portion of the oil which has not gone into solution is driven into the neck with resorcinol solution. Any oily particles adhering to the walls of the flask are caused to rise to the surface by rotating the flask or gently tapping it. After the resorcinol solution has become perfectly clear, which usually requires several hours, the volume of oil remaining is read off, the cineol content ascertained by subtracting this amount from 10 and the resultant multiplied with 10 in order to obtain the percentage by volume. Oils very rich in cineol are advantageously diluted with an equal volume of turpentine oil since the cineol-resorcinol occasionally crystallizes from concentrated solutions thus rendering futile the entire process."

It soon became apparent, however, that this method gave too high results, for the reason that constituents of eucalyptus, other than cineol, are also soluble in the resorcinol solution, and further investigation of the subject, led to the "Modified Resorcinol Method," which consists in distilling the oil of eucalyptus at such a rate that only one drop distills over in one second, collecting the portion distilling between 170° and 190° C., and subjecting this portion to the estimation by the above described Resorcinol Method.

We have examined a number of oils, both by the "original" and "modified" Resorcinol Methods, and have reserved our criticism of these for the latter part of our paper.

Many a chemist's patience has been sorely tried by the Phosphoric Acid method of separating cineol, as outlined in the U. S. P. VIII; and, therefore, the Resorcinol Method, as proposed originally by Schimmel & Co., and as described in the last edition of Gildemeister & Hoffman's "Volatile Oils," seemed to afford an easy and accurate means of estimating cineol. However, it became evident at the first application of this method, that the new process was not above suspicion, especially when some eucalyptus oils, persistently refusing to form a semi-solid precipitate with phosphoric acid, showed unusually high cineol content when assayed by the Resorcinol Method.

The logical idea then suggested itself of trying arsenic acid instead of phos-

phoric acid, with a view of obtaining a more stable addition product, and the results so obtained exceeded our expectations. Later, a search through the literature revealed the fact that the idea was not original with us, since cineol arsenate became the subject of a patent as early as June 20, 1901 (German Patent No. 132606, U. S. Patent No. 705545), and according to Thoms & Molle (Arch. der Pharmazie, 242 (1904), p. 172), they used arsenic acid in February, 1901, for the purification of cineol as well as for its separation from various fractions of the Oil of Bay Laurel. Nevertheless, we justly claim the credit for being the first to apply arsenic acid to the *quantitative estimation* of cineol.

We found that by adding approximately an equal volume of an 85% solution of arsenic acid to cineol, a white, solid, crystalline substance resulted, which is sufficiently stable to permit handling it in the air, and which is decomposed by hot water into its components, that is, cineol and arsenic acid. A compound obtained by mixing equimolecular quantities of cineol (152.98) and Arsenic Acid (140.9) was tested for its stability when exposed to air at ordinary room temperature with the following result:—

5 hours in open air Temp. 25° C.—Loss: 2.9%
22 hours in open air Temp. 25° C.—Loss: 6.0%
29 hours in open air Temp. 25° C.—Loss: 7.0%
45 hours in open air Temp. 25° C.—Loss: 8.4%
69 hours in open air Temp. 25° C.—Loss: 9.6%

The determination of cineol in cineol-bearing oils by means of arsenic acid is carried out as follows:—

Deliver from a pipette 10 cc. of the oil into a glass dish (preferably a round bottom one) of 50 cc. capacity, which is imbedded in finely cracked ice. Add 10 cc. of concentrated arsenic acid (containing about 85% arsenic acid; (see "Note" below) and stir until precipitation is complete. When the mixture ceases to congeal further, allow to stand ten minutes in the ice. *At this point,* if the mixture forms a hard mass, indicating an oil rich in cineol, 5 cc. of purified petroleum ether should be added, and the mass mixed well; transfer immediately to a hardened filter paper* by means of a pliable horn spatula; spread evenly over the surface of the paper and lay a second hardened filter paper over the top. Outside of the hardened filters, place several thicknesses of absorbent or filter paper, and transfer the whole to an ordinary letter press, bringing to bear all the pressure possible for about one minute. Change the outside absorbent papers and press again, repeating the operation, if necessary, until the cineol arsenate is apparently dry, and separates readily when touched with a spatula. The pressing is *not* complete when a hard mass remains which is broken up with difficulty; the method usually requires two changes of filter paper, pressing each time for about two minutes; if left too long in the press the compound may decompose. Now, transfer completely the compound by means of the horn spatula to a glass funnel inserted into a 100 cc. Cassia flask with neck measuring 10 cc. graduated in 1/10 cc. Wash the precipitate into the flask with a stream of hot water from a wash bottle, assisting the disintegration with a glass rod. Place the flask in boiling water and rotate until the compound is thoroughly broken up; add enough water to cause the cineol to rise into the neck of the flask, cool to room temperature

* In our work we found most useful Schleicher & Schull's hardened filters No. 575, 18½ cm. diam.

and read off the volume; on multiplying the latter by 10, the percentage of cineol in the oil is obtained.

In judging whether or not petroleum ether should be added, the following rule should be observed; add enough petroleum ether to soften the cineol arsenate, so as to obtain a plastic mass; the quantity necessary never exceeds 5 cc., and decreases with oils containing less than 80% of cineol. The object of adding petroleum ether is merely to soften the hard mass and to aid in the separation of the non-cineol constituents of the oil; a large excess of petroleum ether will decompose the compound.

The above method is applicable directly to all oils containing above 50% of cineol; in oils containing lower proportions of cineol the precipitate is not solid enough to permit convenient handling; and if the cineol content drops below 25%, the separation of cineol arsenate is not quantitative. We have found that the addition of an equal volume of eucalyptol to such oils (i. e., mixing 5 cc. of the oil with 5 cc. of eucalyptol) successfully overcomes this difficulty; it then, only becomes necessary to subtract from the volume of cineol, as observed in the neck of the flask, 5 cc., and to multiply the difference by 10, in order to obtain the percentage of cineol in the oil.

Note.—The arsenic acid may be obtained in commerce in crystalline form; and may be dissolved in water in such proportion that the resulting solution has the S. G. of 2.173 at 25°, (corresponding approximately to 85% arsenic acid) or it may be conveniently prepared in the laboratory as follows:—

Place in a porcelain evaporating dish 50 cc. Nitric Acid S. G. 1.142, and add 60 gms. arsenic trioxide in small portions, stirring continuously; after the reaction becomes less violent, heat over Bunsen burner until the oxidation is complete and the excess of nitric acid is evaporated; test for freedom from both arsenic trioxide and nitric acid; filter and evaporate to about 100 gms. The resulting solution contains about 85% of arsenic acid (H_3AsO_4.)

In order to test the reliability of the method, we have prepared, to begin with, various mixtures of cineol with turpentine oil, and ascertained their cineol content in the manner above described, with the following results:—

1. 50 vol. % Cineol+50 vol. % Turpentine oil; found 49.5%; 50% Cineol
2. 60 vol. % Cineol+40 vol. % Turpentine oil; found 59 %; 60% Cineol
3. 75. vol. % Cineol+25 vol. % Turpentine oil; found 74 %; 75% Cineol

As stated above, we found that the application of the method to mixtures containing less than 50% cineol is not practicable; and, since adding cineol to such mixtures would have amounted simply to testing known mixtures containing a higher percentage of cineol, we have omitted this part of investigation from the line of our work as originally planned.

In order to test the applicability of our method to various oils containing cineol, we have collected from several sources a number of samples of such oils and subjected them to assaying by the arsenic acid method, comparing our results with those obtained by the Resorcinol Method.

The comparison was carried out both on original oils and on fractions distilling over between 170° and 190° C., as outlined in Schimmel & Co.'s Report, April, 1908 ("Modified Resorcinol Method").

For the purpose of determining the purity of cineol separated by the arsenic acid method, several portions of cineol, obtained in the course of assays of *original* oils, were mixed and subjected to physical examination with the following results:—

S. G. at 25° C.—0.9218; Melting Point—1° C.; Optical Rotation +0°13′.

On the other hand, being already familiar with the fact that results obtained by the Resorcinol Method on original oils are not reliable, we examined only that cineol which was obtained by the "modified Resorcinol Method," and which was thus subjected to considerable purification, at first by distilling the oil, and then by distilling with steam the resorcinol solution containing the soluble portion of the above distillate. Cineol collected in this manner from a number of Resorcinol solutions possessed the following properties:—

S. G. at 25° C.—0.9242; Melting Point—3° C.; Optical Rotation +0°7′.

The criterion of a pure cineol, according to the U. S. P., being S. G. at 25° C. —0.921 to 0.923, Melting Point—1° C.; and optically inactive, the purity of cineol obtained by the arsenic acid method, as evidenced by its physical properties, shows conclusively that none of the constituents of oil of eucalyptus other than cineol are precipitated by the arsenic acid, and that the precipitate of cineol arsenate can be freed, with comparative ease, from the non-cineol portion of the oil in question.

Results of assays made by us on eighteen samples of various oils are incorporated in the accompanying table.

Close agreement of results obtained by the arsenic acid method on original oils with those obtained on the distillate, collected between 170° and 190° C., speaks well for their correctness. An additional argument in favor of this contention is the fact that these results, from the very nature of the process, tend to be somewhat high, rather than low; observing, at the same time, that results yielded by the modified Resorcinol Method are invariably higher than those obtained by our method, we must necessarily conclude, that the latter represent more nearly the true cineol content of an oil; remembering in addition the almost quantitative yield of cineol from its mixture with various proportions of oil of turpentine when precipitated by arsenic acid (see previously), we feel justified in stating that our method gives results which represent the true cineol content within the limits of an experimental error, which in this case does not exceed 2%.

We regard the results of our experiments on known mixtures of cineol with oil of turpentine as conclusive, and our method as directly applicable to all varieties of cineol-bearing oils, for the reason that in such oils, cineol is the only constituent precipitated by the arsenic acid.

The purity of cineol, as well as the close concordance of results obtained by our method before and after distillation, show that oxygenated constituents, other than cineol, are not precipitated by arsenic acid, since fractions distilling above 190° C. carry most of such compounds, and their removal would have resulted in a percentage of cineol lower than that obtained in the assay before distillation, if the opposite were the case.

On the contrary, the numerous experiments carried out by Schimmel & Co. in assaying by the Modified Resorcinol Method, mixtures composed of cineol and fractions of eucalyptus oil distilling *below* 170° and *above* 190° C., do not prove the reliability of this method, since such mixtures do not contain the non-cineol constituents distilling *between* 170° and 190° C., some of which unquestionably are soluble in a 50% resorcinol solution; the latter may be seen from the fact that, in the large majority of oils examined by us, the Resorcinol Method (modified) gave higher results than the Arsenic Acid method.

No.	Name of Oil	S. G. at 25°	O. R.	Arsenic Acid Method		Resorcinol Method		Remarks
				Direct	After Distill.	Direct	After Distill.	
1	Eucalyptus Globulus.....	0.9187	+0° 50′	84% 82%	83%	88%	88%	Boiling-point, 170°-174°
2	Eucalyptus Austral.....	0.9108	+0° 43′	78% 78%	78.8%	90%	85.5%	No distillate below 170° Cineol Fraction=95%
3	Eucalyptus	0.9171		85%	85%	88%	88%	Distilled completely between 170°-190° C.
4	Eucalyptus Bosisto.....	0.9158		84%	84%	90%	90%	Distilled completely between 170°-190° C.
5	Eucalyptus Alger.....	0.9176	+5° 15′	58%	49.6%	see foot-note	57% 55.5%	Fraction below 170°-14.6 cc., contained 8.32 cc. Cineol "Cineol Fraction"=73 cc. (From 100 cc. oil)
6	Eucalyptus Austral.....	0.9182		84% 84%	84.48%	90%	91%	No distillate below 170° "Cineol Fraction"=96%
7	Eucalyptus Amygdalina.....	0.8640	—44° 10′	see foot-note	14.7% 14.7% 15.6%	36%	14.7%	Dist. below 170°=1.5% "Cineol Fraction"=82%
8	Eucalyptus Globulus.....	0.9171		85%	86%	90%	89%	No distillate below 170° "Cineol Fraction"=95%
9	Eucalyptus Amygdalina.....	0.8680	—36° 38′	no precip-itate	5.0% 6.0%	54%	14.8%	Dist. below 170°=2.6% "Cineol Fraction"=78%
10	Eucalyptus Dumosa.....	0.9145		78% 76%	74% 75%	94%	78%	No distillate below 170° "Cineol Fraction"=95%
11	Eucalyptus Globulus.....	0.9179		83%	84.48%	92%	91%	No distillate below 170° "Cineol Fraction"=96%
12	Eucalyptus Austral—50-60%.	0.9254	+4° 24′	64% 65%	66.3%	90%	66.3%	Dist. below 170°=2.6% "Cineol Fraction"=78%
13	Eucalyptus Austral—70-80%.	0.9210		77.5% 78%	78%	92%	87%	No distillate below 170° "Cineol Fraction"=91%
14	Eucalyptus Austral—80-85%.	0.9188		83.5%	84.5%	92%	90%	No distillate below 170° "Cineol Fraction"=96%
15	Eucalyptus Austral.....	0.9178		82% 82% 83%	83%	86%	88%	No distillate below 170° "Cineol Fraction"=95%
16	Eucalyptus	0.9156	+0° 18′	84.5% 85%	86%	88%	88%	No distill. below 170° "Cineol Fraction"=94.5%
17	Cajuput Native.....			60% 61%	49.8% 50.7%	73%	54%	No distillate below 170° "Cineol Fraction"=67% Fraction above 190° contained Cineol
18	Camphor			55%	53%	55%	53%	Dist. below 170°=22% (contained Cineol) "Cineol Fraction"=87%

Foot-note.—Insufficient quantity of oil to complete determinations.

An additional error in the Resorcinol Method is contributed by the solubility of oil of eucalyptus in water, which dissolves from 4% to 5% of this oil, whereas, cineol is almost insoluble; it could not be argued, therefore, that lower results obtained by our method could be due to the solubility of cineol in water.

We have adduced sufficient proof to show that the solubility of certain constituents of cineol-bearing oils must necessarily lead to a higher than actual cineol content when estimated even by the modified Resorcinol Method; it, therefore, becomes superfluous to discuss the total lack of reliability of the original Resorcinol Method in the form proposed for the inclusion into the forthcoming edition of the U. S. Pharmacopœia. Some oils, such as *eucalyptus amygdalina*, may, when assayed by this method, be accepted as a U. S. P. oil of eucalyptus, especially if a small quantity of cineol were added to them. Likewise, oils rich in oxygenated constituents may be freed from a large proportion of their cineol content by freezing and then offered in commerce as a U. S. P. product.

Schimmel & Co., in introducing the modified Resorcinol Method, assume that the fraction of oil of eucalyptus distilling between 170° and 190° carries all of the cineol contained in the oil. We admit that such an assumption may be correct in the majority of oils; we have encountered, however, some oils in which the presence of cineol was proven in portions distilling either below 170° or above 190° C. (see table, oils No. 5, No. 17, No. 18); in such oils, therefore, a certain portion of cineol would not be included into the estimation. Thus, while the modified method is, in a way, an improvement on the original method, yet at the same time, it introduces a new source of error.

Among eighteen samples of cineol-bearing oils, we found only one in which concordant results were obtained by the Resorcinol and Arsenic Acid methods (see table, oil No. 18). We regard this single exception as a final and conclusive proof of the unreliableness of the Resorcinol Method in general, and of the superiority of the Arsenic Acid Method.

SUMMARY.

1. Arsenic Acid forms with cineol an addition compound which is sufficiently stable for all practical purposes.

2. While the Arsenic Acid method cannot be included among those scientifically exact methods, which give results varying only slightly, even in the hands of a novice, nevertheless, we are convinced that this method is superior to any method yet proposed for the determination of cineol, being directly applicable to all cineol-bearing oils, giving results which are concordant within 2%, and representing, for all practical purposes, the true cineol content of an oil.

3. The Resorcinol Method, as slated for the U. S. P. IX, should not be adopted by the Revision Committee, for it will unquestionably lead to the introduction into commerce, of low grade eucalyptus oils; it would be far better to retain the present unsatisfactory phosphoric acid method, which undoubtedly is responsible for the fact that the majority of eucalyptus oils at present on the market possess a high cineol content, as seen from the analysis of samples obtained by us. We may suggest, however, that the Sub-Committee on Volatile Oils investigate the reliability of the Arsenic Acid method with the view of including it in the forthcoming edition of the Pharmacopœia.

Research Laboratory, Bristol-Myers Co., New York.

NATIONAL ASSOCIATION OF MANUFACTURERS OF MEDICINAL PRODUCTS.



H. C. LOVIS, M. D.

The fourth annual meeting of this association was held at the Hotel Waldorf-Astoria on February 8 and 9.

The principal features of the meeting were the address of the President, Dr. Henry C. Lovis, the address of the Executive Committee, and the papers read by Dr. Dohme on "Paternalism in Government;" by F. B. Kilmer, on "Cultivation of Medicinal Plants," and by F. W. Bradford, on "Revision of U. S. Patent and Trade-Mark Laws."

The address of the President described the development of the world's commerce during the past year and congratulated the members upon the wisdom of our forefathers in avoiding "entangling foreign alliances," in view of the deplorable condition of Europe at the present time. He analysed the rise in prices caused by the war and said the lesson to be drawn from them, was that we should endeavor to relieve our country of its dependence upon other countries for supplies and he spoke of the necessity for protecting our manufacturers against the competition of foreign manufacturers.

The condition of our country was fundamentally sound and there was every prospect of great and profitable business for every one.

He referred to the new Currency Law as an efficient stabilizing influence to sound business conditions; to the prosperity of our railroads; to the opening of the Panama Canal and to the development of foreign markets, and strongly insisted upon our need of American ships to keep our money at home,—$270,000,000 of which now goes into the hands of foreign companies. He congratulated the association upon the passage of the Harrison Anti-Narcotic Bill and recommended the continued representation of the Association in the National Drug Trade Conference. He advocated the support of the Price Protection measure, the Variation Clause of the Food and Drugs Act, one-cent letter postage, and extended his hearty thanks to the officers and members and to the drug journals for their coöperation in the work of the Association.

The report of the Executive Committee recommended the rebate of $100.00 in the annual assessment; advocated the establishment of a system of compiling, registering and publishing lists of trade-names and trade-marks, and of amicable adjustment of differences relating to the same, and protested against increase of freight-rates to the Pacific coast.

The committee also recommended the passage of resolutions commending the Harrison Anti-Narcotic Bill; one-cent letter postage; the revision of the patent and trade-mark laws; and opposed any change of the variation clause of the food and drugs act: and the adoption of the German bi-chloride tablet by the Pharmacopœial Revision Committee.

It advocated changes in the laws of the states to bring them into conformity with the Harrison law and commended the efforts of the Philadelphia Drug Exchange, to remedy the injustice imposed by Section 11 of the Food and Drugs Act.

The retiring officers were re-elected for the ensuing year, and the Secretary, Mr. C. M. Woodruff, was voted an honorarium of $500.00.

The meeting was addressed by Prof. Henry C. Hynson, Samuel C. Henry, Charles P. Tyrrell and George C. Hall.

The banquet was on Tuesday evening at the Waldorf-Astoria. President Lovis presided and the speakers were Rev. Dr. Cadman, Congressman Chandler and Luther B. Little.

Contributed and Selected

THE PHARMACOGNOSY OF THE MEDICINAL RHAMNUS BARKS.

E. N. GATHERCOAL, PH. G.

(Continued from page 207.)

RHAMNUS CALIFORNICA BARK.

(The fresh material used for this study was kindly supplied by Dr. Albert Schneider and Mr. Theodore Payne of California.)

The sections from the terminal bud exhibit a total diameter of 2 mm. of which the pith constitutes one-half, the bark 400 microns on either side and the wood circle 100 microns. The structure corresponds very closely with that of similar sections from *Rhamnus purshiana*. The mucilage sacs are especially abundant in the pith, occupying about two-thirds of the total area and apparently containing large rosettes of calcium oxalate, 30 to 60 microns in diameter, embedded in the mucilage. The contents of the pith parenchyma cells are purplish-brown in color.

In sections just below the bud the collenchyma of the outer portion of the middle bark is more distinctive than in the *Rhamnus purshiana*. Few mucilage cells are found in bark or pith, but large rosettes are very abundant and the primary bast is becoming differentiated as an almost continuous band. The phloem parenchyma cells often contain dark brown or purplish contents, as indeed do nearly all the parenchyma cells of the bark except the crystal cells. The cambium is evident and the wood circle is 200 to 300 microns wide.

At 15 mm below the bud the structure is very similar to that of *Rhamnus purshiana*.

In a four-year-old stem the bark exhibits the first evidences of secondary bast, and as yet no stone cells are present in the middle bark. The strongly differentiated character of the collenchyma is very evident.

Sections from the mature bark show a structure strikingly like that of Rhamnus Purshiana.

No distinction in the character of the cork layer could be determined in the two barks.

The collenchyma of *Rhamnus californica* bark observed in specimens from several plants, is larger celled than in Rhamnus Purshiana, these cells reaching a maximum of 100 microns tangentially by 20 microns radially, but averaging about 45 microns by 12 or 15 microns, the walls much thickened. The masses of stone cells in the middle bark are very similar in the number, size and character of their cells to those in similar sections of Rhamnus Purshiana. Rosettes are very abundant and the smaller prismatic crystals plentiful.

In the inner bark the secondary bast is similar to that of Rhamnus Purshiana, strands rather fewer-celled and the fibers somewhat smaller. In inner bark 1 mm. in width, there are 6 tangential rows of bast. The medullary rays in transverse section, are from 1 to 5 cells wide, but mostly 2 and 3 cells wide. In a section 6.7

mm. long there were 28 rays, 4 of them 1 cell wide, 12 of them 2 cells wide, 10 of them 3 cells wide, 1 of them 4 cells wide and 1 of them 5 cells wide. In tangential view the rays are rather broadly elliptical, mostly 3 or 4 cells wide (60 to 100 microns) and from 10 to 30 cells long (150 to 500 microns). The widest I observed was 5 or possibly 6 cells wide, though Farwell found them 7 cells wide. As to the frequency of the rays in the two barks, they are undoubtedly more frequent in the Rhamnus Purshiana. In an average section of Rhamnus Purshiana there were 46 rays in 7 mm. as against 28 rays in 6.7 mm. of *Rhamnus californica* bark. The ray cells in transverse section are sometimes slightly elongated radially, again nearly square and again slightly elongated tangentially. In tangential view they are mostly rounded or irregular. Crystals are not present in the rays.

The waviness of the cambium edge, observed in transverse section, due to a shrinking inward at each medullary ray is a striking feature. It is best seen in rather thick sections of the bark, which has been dried and then softened in dilute alcohol, and mounted in water or phloroglucin and hydrochloric acid. But even in thin sections swollen in potassium hydrate solution this feature may yet be observed. The waviness is not seen in sections of the bark attached to the wood nor in very young bark that has been dried and afterwards softened. It was observed, however, in bark 4 years old.

Potassium hydrate solution colors at once the contents of the medullary ray cells a pinkish-red for a short distance inward from the cambium, and also the phloem parenchyma of the latest growth. After a few minutes, especially in sections cut from dried bark, and mounted directly in the potassium hydrate solution, the entire inner bark with the exception of the bast acquires the pinkish color.

Rhamnus Caroliniana Bark.

(The material for this study was obtained from the Biltmore Nurseries of Biltmore, N. C., and from living plants in the author's garden in Oak Park.)

In transverse sections from the base of the bud of a width of 2.7 mm., the bark constitutes 540 microns and the wood circle 180 microns either side and the pith has a diameter of 1.17 mm.

The structure of these sections is very similar to sections from the base of the bud of *Rhamnus purshiana*. The epidermis consists of small, nearly cubical brown cells with some one-celled, curved or wavy trichomes.

In the middle bark, the outer portion consists of about 8 rows of small rounded parenchyma cells with living contents including chlorophyll grains. The inner portion consists of parenchyma cells containing vast numbers of rosette aggregates of calcium oxalate and with very many mucilage sacs imbedded in it.

The inner bark is narrow and consists of an outer layer of small-celled phloem and a rather wide typical cambium.

The wood circle is like that of *Rhamnus purshiana*.

The pith contains 14 mucilage sacs, the largest 450 microns across and the total occupying two-thirds of the area of the pith. Many rosette aggregates are present in the parenchyma.

In a three-year-old stem, 30 cm. below the terminal bud, measuring 6.5 mm. across, the bark constituted .65 mm. on either side.

The cork was 8 to 10 rows of cells (100 microns) in width, the cells closely resembling those of *Rhamnus purshiana*.

The middle bark is 450 microns wide, the outer portion of collenchyma, the inner portion of typical parenchyma, with a few small mucilage sacs and some rosettes. Small scattered bundles of unlignified primary bast lay at the inner edge. No stone cells are present.

The inner bark is narrow. No secondary bast has been formed.

Sections of the bark from a stem 15 mm. in diameter and 5 years old were 1 mm. wide, of which the cork layer constituted about 100 microns, the middle bark 400 microns and the inner bark 500 microns. The cork was roughened and flaked and in patches up to 18 rows of cells thick.

In the middle bark, the largest mass of stone cells observed was 300 microns long. The stone cells show pores, stratifications and lumen quite distinctly.

The inner bark contains 1 or 2 rows of small bast bundles, typically like the early *Rhamnus purshiana* bundles. The medullary rays are elliptical in tangential view, the widest observed being 4 cells wide, but mostly 2 and 3 cells wide. They are rather short, the longest observed being 20 cells long. The ray cells are mostly square or slightly elongated radially. The rays are numerous, 30 rays in a transverse section 3.4 mm. long, thus being twice as numerous as in *Rhamnus californica* bark and a half again as numerous as in *Rhamnus purshiana* bark.

No evidence of a waviness along the cambium edge was observed.

With potassa solution, the parenchyma cells of the inner bark acquire a pink-red color.

RHAMNUS WIGHTII BARK.—(After Hooper.)

Masses of stone cells are found in the middle bark and rosette aggregates of calcium oxalate crystals are abundant in the parenchyma cells.

The inner layers consist of pale yellow bast fibers running through a mass of cells containing yellow brown color. The bast bundles are surrounded by numerous rhomboidal crystals. The medullary rays and inner cellular layers are filled with starch and a yellow coloring matter acquiring a brilliant red with potash solution.

RHAMNUS FRANGULA BARK.

(The fresh material used for this study was collected in the dormant season from cultivated plants in the south parks in Chicago and in the author's garden in Oak Park, Illinois.)

The sections obtained from the terminal bud correspond very closely with those

(Detail of cuts on succeeding page.)

RHAMNUS FRANGULA AND RHAMNUS CATHARTICUS.

Fig. 23—Transverse section of the bark from a 9-year-old stem of *Rhamnus frangula*. A—outer bark, B—middle bark, C—inner bark. 1—cork, the outermost rows compressed; 2—collenchyma; 3—middle bark parenchyma with numerous rosettes of calcium oxalate crystals; 4—the earliest secondary bast; 5—secondary bast of later growth with accompanying crystal fibers; 6—phloem consisting mostly of parenchyma with some rosettes of calcium oxalate; 7—medullary ray, practically free from crystals; 8—cambium. (X 200, reduced ½.)

Fig. 24—From the inner bark of *Rhamnus frangula*, in transverse view. 1—bast fibers; 2—crystal fibers; 3—phloem parenchyma, one cell showing a rosette aggregate, another with living cell contents and a third with pores in the bottom wall. (X 600, reduced ½.)

Fig. 25—The inner bark of *Rhamnus frangula* in tangential view. 1—medullary ray; 2—phloem parenchyma; 3—bast fibers; 4—crystal fibers. (X 600, reduced ½.)

Fig. 26—Transverse section of the bark *Rhamnus catharticus* from a 4-year-old stem. A—outer bark, B—middle bark, C—inner bark. 1—cork, many rows of narrow cells much elongated tangentially; 2—collenchyma of a few poorly differentiated rows; 3—parenchyma with some calcium oxalate rosettes; 4—unlignified primary bast; 5—lignified secondary bast with crystal fibers; 6—phloem parenchyma; 7—medullary ray; 8—cambium. (X 200, reduced ½.)

Fig. 27—Tangential view from the outer and middle barks of *Rhamnus catharticus*. 1—cork; 2—phellogen; 3—parenchyma with rosette aggregates; 4—primary bast in interweaving strands. (X 600, reduced ½.)

Figs. 28 and 29—Tangential views from the inner bark of *Rhamnus catharticus*. 1—medullary ray; 2—bast fiber; 3—crystal fiber; 4—phloem parenchyma with strongly beaded walls and occasional rosettes of calcium oxalate crystals. (X 600, reduced ½.)

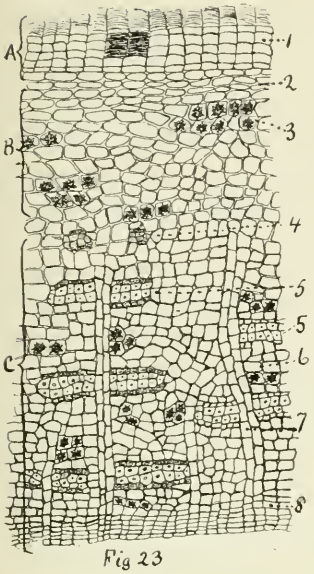


Fig. 23



Fig. 24

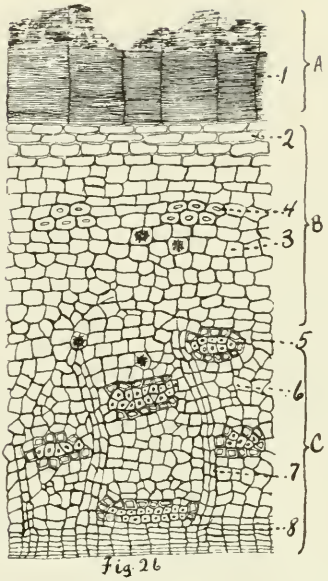


Fig. 26

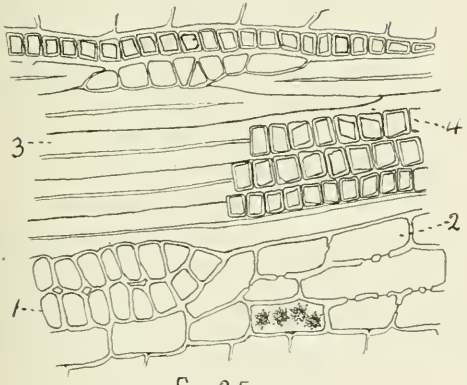


Fig. 25

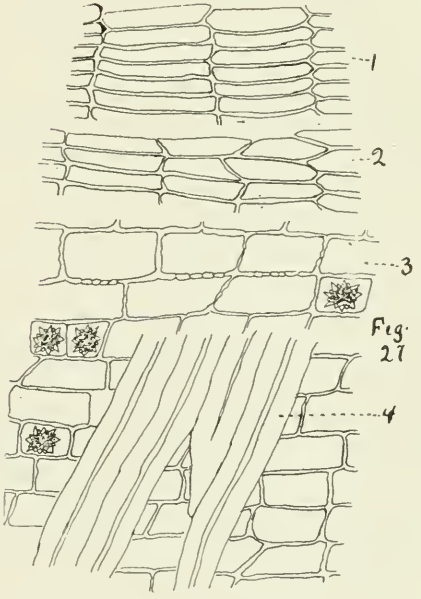


Fig. 27

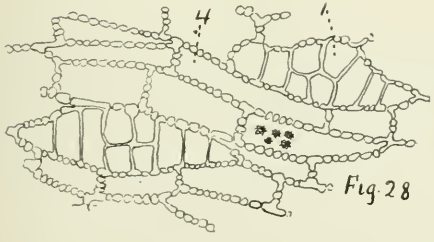


Fig. 28

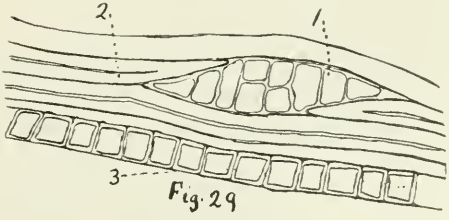


Fig. 29

from *Rhamnus purshiana* bark, likewise no distinctions could be made in sections from each plant just below the bud, except possibly a somewhat less number of mucilage sacs and of rosette aggregates of calcium oxalate in the *Rhamnus frangula*. It is noteworthy, however, that already, in these sections from the base of the bud, cork has made its appearance, for in some portions of the section three layers of typical cork cells were present beneath the epidermis, in other portions none, though a phellogen can be distinguished throughout the whole circumference. The cork cells are mostly 15 microns tangentially, 8 to 10 microns radially, thin walled, the outer row with the walls red-brown in color.

In sections 2 mm. below the bud, the epidermis, with the abundant brown trichomes; the parenchyma, mucilage sacs, unlignified primary bast and rosette aggregates of the middle bark; the thin phloem layer and the medullary rays of the xylem all correspond with similar tissues in similar sections of *Rhamnus purshiana*. The brown-walled cork is in a continuous layer 3 to 5 cells wide.

At 5 cm. below the bud, the outer bark is 50 to 90 microns wide, the middle bark 200 microns across, the inner bark 160 microns wide, the wood circle 360 microns wide and the pith 1170 microns in diameter: total diameter of the stem 2.75 mm. There are no changes of note except a slight thickening of the cork, phloem and xylem layers. The medullary rays of the wood are lignified.

At 15 cm. below the bud the wood is of two seasons' growth, the width of the xylem circle being nearly 1 mm., the pith 1 mm. in diameter and the bark nearly ½ mm. thick. There are practically no changes in the bark. In another specimen from a three-year-old stem of a total diameter of 4.5 mm. the cork is irregular, up to 100 microns thick, the middle bark is 200 microns thick and the inner bark 200 microns thick. No secondary bast nor stone cells are present.

In a four-year-old stem the first evidence of secondary bast is found.

In a nine-year-old stem sectioned through a lenticel, the bark measures 1.07 mm. in thickness, of which 240 microns is outer bark, 200 microns middle bark and 630 microns is inner bark. The outer bark consists of exfoliating layers of small dark red cork cells intermixed with colorless cork cells and of a typical lenticel structure. The middle bark of parenchyma contains interweaving strands (one circle only) of non-lignified primary bast. No stone cells are present. The inner bark contains 5 irregular circles of bast bundles with the accompanying crystal fibers. The medullary rays as seen in tangential view are either a single row of cells or a narrow biconvex mass 2 or 3 cells wide. Small rosette and prismatic crystals in the parenchyma are very abundant. A few starch grains 3 or 4 microns in diameter are found in the parenchyma of medullary ray, phloem and middle bark.

Samples of the commercial drug gave sections very similar to the ones just described. The outermost layer of brown cork is seen to consist of several rows (8 to 20) of small rectangular cells, many with purplish contents, arranged one behind another in regular radial rows. The middle bark is of rounded or oval parenchyma cells with rather thin cellulose walls and granular contents and, it is worthy of note, that the parenchyma cells in the dried, cured bark often possess deep brown or purplish-brown contents. Many prismatic crystals and rosette aggregates are found in the cells of this layer. The inner bark is traversed radially by the rather numerous, nearly straight medullary rays up to 3 cells wide and

longitudinally by the conspicuous bast bundles with from 2 or 3 to 30 or 40 bast fibers in each. The individual fibers are narrow, thick walled, the cavity but a line and strongly lignified. Adherent to each bundle of bast are the typical crystal fibers.

Powdered Frangula, macroscopically, very closely resembles powdered Cascara, for in many samples of each powdered drug observed, the resemblance in color, odor and taste was so striking that they could not be differentiated by these means. Microscopically, nearly all the tissues in powdered Frangula closely resemble the corresponding tissues in powdered Cascara, though there is one very characteristic tissue, the stone cells, in Rhamnus Purshiana not present at all in Frangula. Therefore, it is not difficult to distinguish between these powders when separate, nor to detect Cascara in Frangula. It is somewhat more difficult to detect Frangula admixed with Cascara. However, the purplish contents of many of the cork cells of Frangula give to most of the fragments of cork, especially in a mount in chloral hydrate solution, a bright purplish color, while the fragments of cork from Rhamnus Purshiana remain of a brown or reddish-brown color.

RHAMNUS CATHARTICUS BARK.

(The material used for this study was obtained from cultivated plants from the Missouri Botanical Gardens of St. Louis, from the south parks of Chicago, and from plants in the author's garden in Oak Park, Ill.)

The stem of *Rhamnus catharticus* does not often possess a terminal bud. After the growth for the summer has ceased the terminal bud usually dies and that portion of the stem, 5 to 40 mm. long, projecting beyond the uppermost pair of axillary buds, hardens and becomes more or less pointed and thorny.

In transverse sections from about the middle of the lateral bud the epidermis corresponds to the similar epidermis of *Rhamnus purshiana* except that it is almost devoid of trichomes. A few appressed pairs are noted on the bud scales. The parenchyma of the middle bark consists of rounded cells up to 30 microns in diameter with thin, cellulose walls, cytoplasm, nucleus, chloroplasts and an occasional rosette aggregate of calcium oxalate. No mucilage sacs are present. Evidences of a primary bast are seen. Neither medullary rays nor cambium are present. The pith cells contain many large rosettes of calcium oxalate, but no mucilage sacs are present. Total diameter 1 mm.: cortex 175 microns wide, wood circle 125 microns wide, pith 400 microns in diameter.

In sections from the base of the bud the structure of the stem is very similar to that just described, except that the wood circle is wider, up to 200 microns, the xylem masses contain 10 or 12 tracheal tubes in a radial row and medullary rays are distinct.

The stem just below the uppermost pair of lateral buds has already attained a considerable maturity, as is evidenced by a growth of cork, of secondary bast, phloem and medullary rays and a lignification of the pith. The following is a brief description of sections 1 mm. below the base of the uppermost pair of lateral buds.

Epidermis—cells 15 microns radially, 20 microns tangentially, cuticle 8 to 10 microns thick. Cork—8 to 10 tangential rows of cells have a total width of 30 microns radially, the cells being 15 to 75 microns tangentially, the lumen but a

line and the walls thin and brown. Outer parenchyma—slightly collenchyma-like, the cells 15 microns radially, 15 to 30 microns tangentially. Inner parenchyma—isodiametric, up to 30 microns in diameter the cell contents brownish in color. Primary bast—in masses much elongated tangentially, 2 or 3 cells wide radially, the cells seldom exceeding 15 microns in diameter, somewhat compressed, with very thick cellulose walls. Secondary bast—1 or more rows of small bundles containing 3 or 4 to 15 or 20 cells tangentially and 1 to 3 cells radially, the fibers seldom exceeding 12 microns in diameter, with thick lignified walls. Crystal fibers—abundant; in structure and location the same as in *Rhamnus purshiana*. Medullary rays—distinct, 1, 2 or 3 cells wide. Phloem—parenchyma abundant; sieve and companion cells in small patches, the sieve plates difficult to differentiate. Wood circle—300 microns thick.

A transverse section at the base of the season's growth, measuring 2.3 mm. across, corresponds very closely to the above description, except that the wood ring is 400 microns in thickness.

The bark from a stem four years old measured 0.7 mm. in thickness. The structure of this bark differs but little from that described above, though the following changes may be noted: Cork—somewhat thicker and occasionally roughly split longitudinally. Primary bast—in small bundles rather widely separated by parenchyma. Secondary bast—in 3 irregular tangential rows. The prismatic crystals of the crystal fibers are very prominent. Rosette aggregates 10 microns across are common in the phloem.

Bark that would correspond with commercial bark if the drug was on the market may be described as follows: A specimen 2 mm. thick possessed a dense cork layer from 100 to 300 microns thick, dark yellow-brown in color and much fissured and flaked. The middle bark, 200 microns thick, consisted mostly of chlorophyll-bearing parenchyma, a few of the outer rows somewhat collenchymatous, with a few rosettes, a few widely separated primary bast strands and no stone cells. The inner bark 1620 microns wide at the thickest part, had 18 tangential rows of secondary bast, the character of each bast strand typically that of

(Detail of cuts on succeeding page.)

RHAMNUS CHLOROPHORUS, CAROLINIANA, CROCEUS, AND CALIFORNICA

Fig. 30—Transverse section of mature bark from *Rhamnus chlorophorus*. A—outer bark, B—middle bark, C—inner bark. 1—cork, the cells narrowed radially and elongated tangentially and the outermost rows compressed; 2—collenchyma; 3—parenchyma; 4—unlignified primary bast; 5—lignified secondary bast with accompanying crystal fibers; 6—phloem, consisting mostly of parenchyma and bearing no crystals; 7—medullary ray with numerous rosette aggregates of calcium oxalate; 8—cambium. (X 200, reduced ½.)

Fig. 31—Transverse section of the bark from a 5-year-old stem of *Rhamnus caroliniana*. A—outer bark, B—middle bark, C—inner bark. 1—cork, the outermost rows compressed; 2—collenchyma, strongly differentiated and with thickened cellulose walls; 3—parenchyma with rosettes and prisms of calcium oxalate; 4—masses of stone cells; 5—unlignified primary bast; 6—lignified secondary bast with crystal fibers; 7—phloem, consisting mostly of parenchyma and bearing small rosettes; 8—medullary ray without crystals; 9—cambium. (X 200, reduced ½.)

Fig. 32—Transverse section of the mature bark of *Rhamnus croceus*. A—outer bark, B—middle bark, C—inner bark. 1—cork, the outermost rows compressed; 2—collenchyma, tangentially elongated cells with thickened cellulose walls; 3—parenchyma with large rosettes of calcium oxalate crystals; 4—unlignified primary bast; 5—lignified secondary bast with crystal fibers, the bundles mostly separated from the surrounding parenchyma; 6—phloem, the cells sometimes compressed and consisting mostly of parenchyma with occasional rosettes of calcium oxalate; 7—medullary ray without crystals; 8—cambium. (X 200, reduced ½.)

Fig. 33—Transverse section of the bark from a 10-year-old stem of *Rhamnus californica*. A—outer bark, B—middle bark, C—inner bark. 1—cork, the outermost rows compressed; 2—collenchyma, strongly elongated tangentially with much thickened walls; 3—parenchyma with numerous rosettes and prisms of calcium oxalate; 4—a group of stone-cells; 5—unlignified primary bast; 6—lignified secondary bast with crystal fibers; 7—phloem parenchyma; 8—medullary ray. (X 200, reduced ½.)

Fig. 34—Transverse section of the inner bark of *Rhamnus californica* stem. 6, 7 and 8—same as in Fig. 33. 9—the cambium, the edge showing the waviness characteristic of this bark. (X 200, reduced ½.)

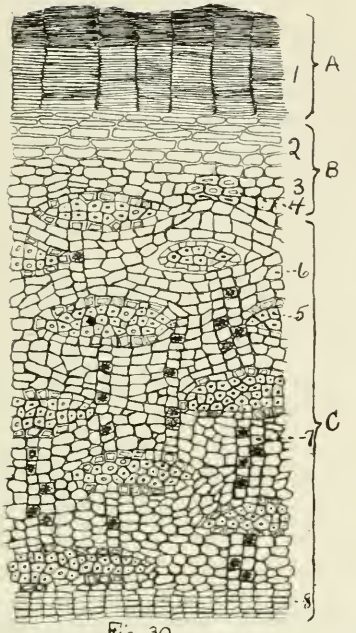
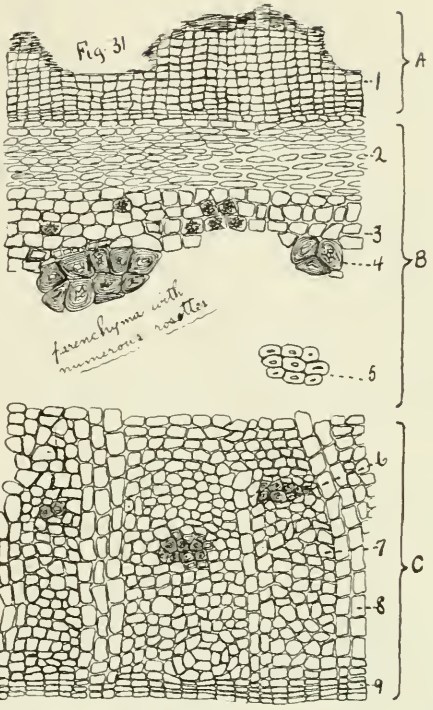

1
A
2
B
3
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6
5
C
7
8

Fig. 30


Fig. 31
1
A
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4
parenchyma with numerous raphides
5
6
7
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8
9

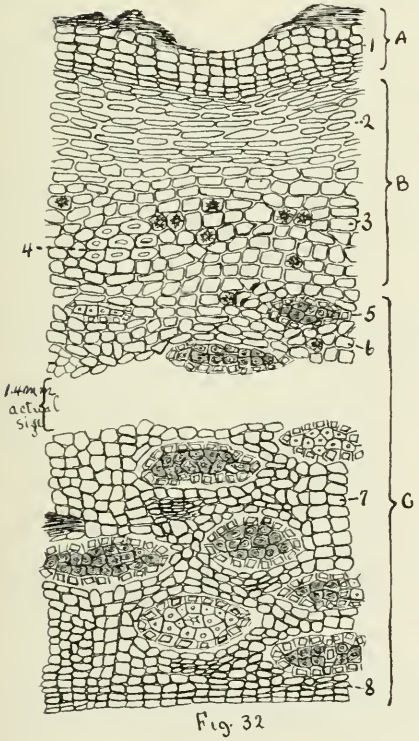
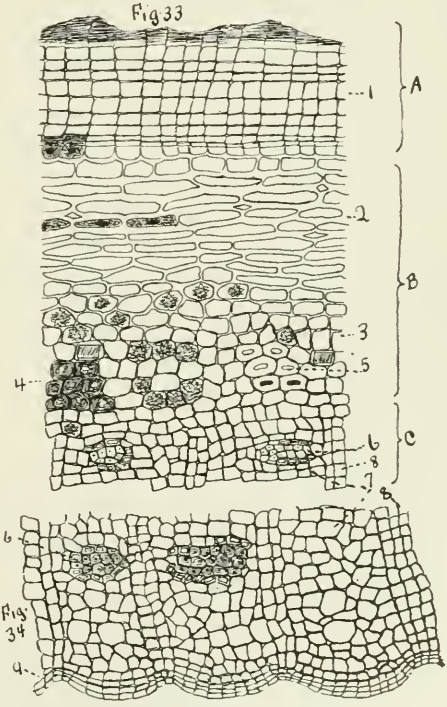

1
A
2
B
3
4
5
6
1.40mm actual size
7
C
8

Fig. 32


Fig 33
1
A
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8

6
Fig 34
4

the bast in Rhamnus Purshiana, though the bundles in *Rhamnus catharticus* are smaller, being mostly less than 200 microns (about 12 fibers) tangentially and less than 60 microns (4 fibers) radially, most of them but 2 fibers radially. The bast strands are inclined to unite with one another in each row and even form extensive tangential layers penetrated by the medullary rays. The phloem masses are distinct, though the sieve plates are differentiated with difficulty, most of the phloem cells being parenchyma, somewhat elongated longitudinally and with strongly beaded walls. Many cells with yellow contents are scattered in the phloem parenchyma and practically all the cells of medullary ray and phloem acquire a bright red color with potassa solution. The medullary rays are seldom 3 cells wide, mostly 2 cells or but 1 cell wide. The cells are elongated tangentially (up to 45 microns) rather than radially (up to 20 microns). In the tangential section of the bark, the rays are broadly elliptic because of this tangential elongation of the ray cells and because of the shortness of the rays longitudinally, about 6 to 10 cells.

It is to be noted that the bast strands easily separate from the surrounding parenchyma and in longitudinal section or in the powder the interlacing bundles appear in long masses with numerous fusiform spaces through which have passed medullary rays.

RHAMNUS CROCEUS BARK.

A specimen of bark 2.5 mm. thick possessed a rather thin cork layer, about 100 to 200 microns thick, rough and flaked and with cork cells nearly square or somewhat elongated tangentially (15 to 30 microns long). The middle bark (320 microns wide) consisted of an collenchymatous portion and an inner parenchyma layer. Rosettes and prisms of calcium oxalate were very abundant. There were no stone cells, but a few widely-separated strands of non-lignified primary bast.

The inner bark, 2 mm. wide, contained 18 tangential rows of secondary bast bundles, each strand like that of Rhamnus Purshiana bark. The bast bundles were from 8 to 30 cells (350 microns) tangentially and from 1 to 5 cells (80 microns) radially. The crystal fibers were very abundant, sometimes 2 rows about a bast bundle. The medullary rays, in tangential view, were elliptical, though not so broad as in *Rhamnus catharticus*, from 6 to 12 cells (100 to 250 microns) longitudinally and from 1 to 3 cells (20 to 80 microns) wide, though mostly 2 cells wide. The cells were nearly isodiametric, sometimes slightly elongated tangentially or radially, and nearly devoid of rosette crystals. In transverse view the rays were rather indistinct, but could be followed. There were 30 rays in 6 mm. of bark.

The phloem consisted mostly of parenchyma cells elongated longitudinally with square ends and non-beaded walls. Often the cells were much compressed radially between the bast bundles. Crystals were rather few except in the outer portion of the inner bark. All the parenchyma cells of the inner bark acquired a bright red color with potassa solution.

As in *Rhamnus catharticus* bark the bast strands easily separate from the surrounding parenchyma. In transverse section many of them fall out, leaving elliptical spaces and in longitudinal section and in the powder the interlacing bundles are in long masses with elliptical spaces through which passed medullary rays.

Rhamnus Chlorophorus Bark.

The dried bark from old stems soaked in dilute alcohol and sectioned, exhibited the following structure:—

Outer bark—100 to 300 microns thick, consisting of a brown cork layer supporting externally some thin lichen growths and internally a narrow disrupted phellogen. The cork cells are much elongated tangentially up to 75 microns, narrow radially, 8 to 10 microns, thin-walled, suberized.

Middle bark—200 microns thick, consists mostly of tangentially elongated collenchyma cells, up to 100 microns, but not more than 15 microns radially, with thick cellulose walls and long narrow cavities with brownish, granular contents. An occasional strand of much compressed unlignified primary bast is seen. No stone cells are present. Some rosette aggregates of calcium oxalate.

Inner bark—up to 1 mm. thick. Contains very many bundles of strongly lignified secondary bast separated by interlacing bands of phloem and indistinct medullary rays. There were 12 tangential rows of bast bundles in an inner bark 0.9 mm. thick.

The bast bundles are elliptic in transverse view, 2 to 5 cells wide radially and 5 to 20 cells tangentially, the fibers not more than 15 microns thick and each bundle invested by a single row of crystal fibers, typically those described under Rhamnus Purshiana. The phloem does not display sieve tubes well, but apparently consists mostly of parenchyma, the cells of which are rounded or oval, somewhat compressed tangentially and elongated longitudinally. Because of the number and close proximity of the bast strands and the indistinctness of the medullary rays, the narrow bands of phloem appear as though interweaving around and between the bast strands. The medullary rays are very indistinct in the transverse view, though they can be traced by a very slight difference in the shape of their cells from the surrounding parenchyma cells and by the presence of calcium oxalate rosettes. These crystals are numerous in the rays, but very scarce in the other tissues of the inner bark. In the tangential section the rays are elliptic in shape, 2, 3 or 4 cells wide at the broadest part, 10 to 30 cells long. They penetrate the bast strands and phloem parenchyma.

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FRESHLY PRECIPITATED RESINS IN AQUEOUS MEDIUM.

SAMUEL T. HENSEL, PH. G.



The object of this paper is to serve the two-fold purpose of suggestion to some future investigator, and to present a practical application of an observed phenomenon.

It is prompted by the reading of a query sent to the editor of one of our leading trade journals, which appears in the current issue of December, just received. The correspondent asks for information concerning the method to be employed in the preparation of a mixture of rose-water, glycerin and tincture of benzoin, a well-known and popular form of toilet cream.

Ten years ago, or more, the writer observed that the various resinous tinctures of the United States Pharmacopœia, such as the tinctures of benzoin, myrrh, asafetida, etc., were differently affected by the same volume of water: the permanence of suspension of the freshly-precipitated resin, depending upon the method employed in bringing these two substances together. The two following experiments were performed at that time.

Experiment No. 1:—Three ounces of distilled water were introduced into a four-ounce prescription bottle, and one half fluid-dram of tincture of benzoin was then carefully added, drop by drop, shaking the contents of the bottle vigorously after the addition of each drop.

Suspension of the precipitated resin, was apparently complete, until the addition

of the tenth or twelfth drop, when minute masses of agglutinated resin were observed floating throughout the mixture; these increased in size and number until apparently the greater part of the resin-content of the tincture was thrown out of solution.

The results obtained in this experiment prompted the following:

Experiment No. 2:—Three fluid ounces of distilled water were introduced into another four-ounce prescription bottle, and in this case, the procedure was the reverse of experiment No. 1, the entire one-half fluid dram of the tincture of benzoin being rapidly delivered upon the surface of the water contained in the bottle and permitted to rest upon the surface for the period of about five seconds, and then the mixture was vigorously shaken, as before.

The result in this case was the complete suspension of the resin, producing a permanent emulsion which showed no sign of change after the period of ten days.

More recently, in making a practical application of the result of these experiments, I find that as much as one and one-half fluid ounces of tincture of benzoin, may be delivered into the volume of twelve fluid ounces of water, in the manner described in experiment No. 2, and, if immediately incorporated with an equal volume of glycerin, a white and permanent emulsion will result.

Naturally, when a new or strange condition is observed, the question arises in the mind of the investigator, "What is the cause," and his hypothesis, then formed, will frequently assume a working phase which will lead him into a rational procedure, which will finally result in the solution of his problem.

I am not in a position at present to give the results of a systematic scientific investigation, but I have nevertheless formulated an opinion which may be of service to some other investigator, and help him to the solution of a problem of perhaps greater importance.

It is a well known fact that when alcohol is mixed with water, there is an immediate evolution of heat, which in the terms of physical chemistry, is the "Heat of solution," and is of positive sign (exothermic).

It is also known that water is porous, as has been demonstrated both by physicist and chemist, in recent years.

Now, in the case of experiment No. 1, the nuclei or minute sub-division of resin, as quickly as they are formed, are subjected to the influence of the heat of solution referred to; their surfaces becoming areas of adhesion, and, as their number increase with each successive drop, the subsequent agitation to which they are subjected has the effect of bringing the particles closer together. The element of time now intervenes, and, as they have increasingly shorter distances to travel,—their surfaces being still thermally affected,—they adhere, to form the masses observed in the experiment.

In the case of experiment No. 2, owing to the sudden development of the heat of solution, the inter-spaces of the water are thermally affected to the extent that numerous and infinitely small channels or tubes are created at the surface, into which the resin is temporarily deposited, which again, when vigorously shaken, are broken up into infinitely small particles, whose comparatively limited area are suddenly chilled, and thus rendered incapable of adhesion. Hence, a permanent suspension of the resin.

THE DEBT WHICH MEDICINE OWES TO SECRET PREPARATIONS.

OTTO RAUBENHEIMER, PHAR. D.

A great many preparations are in daily use as household remedies, and even as official preparations in the U. S. P. and N. F., which originated as secret medicines. The history and the evolution of these remedies is very interesting, and the writer, as teacher of History of Pharmacy in one of our Colleges, takes special interest in this subject, and takes pleasure in presenting the origin of some of these remedies.

The reason that some of the proprietary remedies are called "Patent Medicines" is that they were originally patented, and I herewith present a list of some of the remedies still used to-day together with the date when they were patented:

Haarlem Oil	1672	John Hooper's Female Pills	1743
Godfrey's Cordial	1720	Dr. James' Powder	1747
Bateman's Pectoral Drops	1726	Roche's Embrocation	1803
British Oil	1742	St. John Long's Liniment	1820

All of these old remedies are still extensively used to-day, in spite of the fact that some of them have been patented almost two hundred and fifty years ago. The "Female Pills" originated by John Hooper, apothecary and man-midwife as he was called, continue to have a very large sale.

Physicians and pharmacists have lent a helping hand in originating preparations which have greatly enriched our Materia Medica, for instance: Paregoric was originated by Dr. Le Mort, Professor of Chemistry at the University of Leyden, and the predecessor of the immortal Boorhaave, the founder of the celebrated Vienna Medical College. Wine of Opium originated by the celebrated English physician, Sydenham, Comp. Powder of Rhubarb originated by Dr. James Gregory, Professor of Medicine at Edinburgh. Calamine Ointment, originated by Dr. Daniel Turner, a celebrated surgeon at London. Powder of Ipecac and Opium, by Thomas Dover, doctor and pirate. In connection with this, permit me to point out that even in those early times some of the doctors were pirates! Solution of Potassium Arsenite, by the apothecary, Thomas Fowler. In connection with Fowler's solution, I beg to state that he originally kept its Arsenic content secret and named it *Mineral* Solution.

Perhaps the most important of this class is *Rochelle Salt,* which was accidentally discovered by the French apothecary, Pierre Seignette in 1672, and the composition of which was kept secret for almost sixty years, until at last in 1731, two French pharmacists made an analysis.

Sodium Bicarbonate was introduced into medicine by the Berlin apothecary, A. W. Bullrich, as his "Universal Salz" in 1840. Let me point out that Bullrich "threw the bull" for a number of years and at the same time succeeded in getting "rich" from it. Nevertheless, pharmacy and medicine owe a great debt to Bullrich for introducing this chemical into therapy.

Many of the secret remedies became celebrated panaceas and obtained such fame, and did such an amount of good that the formulas of same were bought by the monarchs in those days at a very fancy price. This is an entirely different

procedure to what the present Board of Health of our great city of New York pretends to do!

The following are some of the examples:

Louis XIV, King of France, bought the following: Helvetius' Ipecac Remedy in 1686 at 1000 Louis d'or; Glauber's Kermes Mineral in 1720 at a fancy price; Talbor's Cinchona Remedy in 1780 at 2000 Guineas.

Louis XV bought the formula for La Mothe Tincture, giving him a pension of 4000 Livres a year.

Louis XVI purchased Mme. Nouffer's Tapeworm Remedy, at 18,000 Livres;

King Charles II of England bought Dr. Goddard's Drops for 6000 pounds Sterling, and Empress Catharine II of Russia invested in Bestuscheff's Tincture, 3000 Rubles.

It will no doubt interest the readers of the Journal A. Ph. A. to learn of a striking example of the effects, the bad effects, of the publication of a formula. The specific is that of *Warburg's Tincture.*

Originated in 1840 by Dr. Carl Warburg, an Austrian physician, it soon proved to be a specific in Malaria and Ague. In spite of being a secret remedy, the Austrian Imperial Health Board in 1848 ordered this tincture to be kept in stock in *all* the pharmacies of the Empire, and even established at Vienna, a central depot at which the preparation was manufactured under the supervision of the inventor.

The fame of Warburg's Tincture spread as far as India, and it was considered as one of the necessities of all British soldiers going to that country. In consequence of this, the preparation obtained a tremendous sale. At last Dr. Warburg was persuaded, in fact pressed to disclose his secret formula. Warburg did so. What was the consequence? Warburg, the originator of the celebrated Anti-periodic Tincture, died in poverty.

The author does not claim that this subject is exhausted and hopes to be able in the near future to find the time to make a complete compilation of the origin, the history and the evolution of the U. S. P. and N. F. preparations.

THE RELATION BETWEEN MEDICINE AND PHARMACY.*

WILFRED M. BARTON, M. D.,

Associate Professor of Medicine in the Medical Department of Georgetown University.

In the first place, I shall take it that we are met here to-night, physicians and pharmacists, not merely for self glorification, but for the purpose of seriously discussing the true existing relations between our two professions, Medicine and Pharmacy; to find out whether we are drifting apart, developing a closer union, or merely maintaining a *statu quo* which we have inherited from our immediate

* Read at a joint meeting of the Therapeutical and Pharmaceutical Societies of Washington, D. C., June, 1914.

predecessors. In any event we would like to know exactly what is the trend of affairs concerning our relations, the principal factors upon which this relation depends and, of course, we would like to find a way to improve these relations whatever they may be.

Primarily, I may say, what is no doubt evident to any one who thinks about it, that such a social re-union as this one to-night cannot but be productive of good results, because social intercourse between different, nay even differing interests, is the surest method of enhancing their mutual adjustment. We are, of course, not arbitrating anything, for it has not appeared that we have any differences to adjust; but the mere getting together of men engaged in related pursuits, is a sure way of enlarging their sympathies, and of widening their field of vision. What was before of only academic interest in the mind becomes vitalized by humanitarian and sentimental forces. We see not only a related science with all its technical accoutrements, but a brother human being working away and devoting his life to it. So, I would suggest, on this account, that such meetings as this be made more frequent and more general. The state pharmaceutical and medical societies should work out a plan of closer affiliation. When the American Medical Association meets annually in a certain place, there also and at the same time should the American Pharmaceutical Association meet. Could this be done some very interesting events would take place, science would be advanced, disputes would be adjusted, professional ethics enlarged, quackery and charlatanism would receive blows from the effects of which they would sooner succumb. There is, however, one thing which serves at least periodically to bring physicians and pharmacists in this country closer together, and that is, the Pharmacopœia. The decennial revision of this great book, which has gone through eight editions, with a ninth one soon to appear, provides the only formal opportunity, at present indulged in, for closer affiliation and interchange of views between the two professions. The Committee on Revision, composed as it is of distinguished representatives from both, whose work extends over a period of years, tends to enlarge, to dignify, and to perpetuate, the bond of sympathy which exists between them.

It is always best to be methodical and if I were submitting any formal thesis upon the relations of Medicine to Pharmacy I should like to begin with a review of the historical aspects of this relation.

The pharmacopœia forms the closest link between Medicine and Pharmacy. The scientific state of both at any given period, since the middle of the 16th century when the first pharmacopœia, that of Valerius Cordus, appeared (1540), may be read in its pages, and is reflected by its contents. The first London Pharmacopœia appeared in 1618. It contained 1960 remedies, of which there were 1028 simples, 91 animal products and 271 vegetable products. There were some very strange substances in it, many of which to us now appear vile and disgusting, and it is hard for us to believe that intelligent men ever attributed therapeutic value to these things, such for example as worms, dried viper lozenges, dried fox's lung, powdered precious stones, oils of ants and wolves. The edition of 1650 contained moss from the skull of a victim of violent death, crab's eyes, animal feces, cock's comb, human perspiration, saliva of a fasting man, human placenta, wormian bones from executed criminals, and other items too numerous

to mention, and, certainly revolting, when one considers the proposition of swallowing them.

But even our present Pharmacopœia contains many useless, if not so disgusting, things, and if William Heberden, in 1745, was forced to make an onslaught upon the superstitions which retained animal feces and human placenta in the pharmacopœia in his day, and did not find it an easy proposition to secure their elimination, so also, at the present time, it is no easy matter to secure the deletion of many utterly worthless substances from the modern book. I often wonder whether future generations will not look down upon our far-famed ninth revision quite as ludicrously in some respects as we look back upon the English pharmacopœias of 1650. It is unfortunate, it seems to me, that the pharmaceutical factions who are concerned in revising our Codex, are usually opposed to the idea of deletion and use their influence toward the retention of substances in the book which to the modern physician who is acquainted with the progress of pharmacological and experimental therapeutic research seem entirely superfluous, and scientifically degrading. Those who are interested in this aspect of things we are discussing should read a paper by Doctor O. T. Osborne on "The Absurdities and the Commercialism of the Proposed 9th Decennial Revision of the U. S. Pharmacopœia." Though he does not say so categorically, yet by implication, the blame is put largely upon the Pharmaceutical representation in the executive committee on revision, eleven out of the sixteen of which are pharmacists. Out of one hundred and fifty-eight drugs and preparations, proposed to be deleted from the 9th revision by the sub-committee on scope, seventy-nine were voted back by the pharmaceutical influences prevailing in the executive committee.

One of the great functions of the pharmacopœia is to keep constantly in view the close relations between Medicine and Pharmacy, which without it might by some be totally forgotten or ignored.

I had not intended to say so much about history and the pharmacopœia, but there is one more historical reference which will serve to clarify in a way, the reasons for the existence of a special feud between Medicine and Pharmacy which has been going on for about four hundred years. This is the dispute over the so-called "prescribing by druggists." According to history, the grocers were the original drug merchants in England. In 1606, during the reign of James I, the apothecaries were incorporated, and succeeded in obtaining from the grocers this coveted monopoly. This aroused the ire of physicians, because, no sooner were the druggists invested with the power to compound and to sell all medicines, than they discovered that money could be made in easy fashion by selling direct to the people on their own responsibility. Thus began "drug dispensing" and with it a war which has continued, more or less openly, to the present day. Physicians and druggists continued to wrangle on this point in England for half a century, when, in 1665, the Great Plague broke out in London. The apothecaries stayed at their posts, while the doctors, including the great Sydenham himself, fled for their lives.

It seems that even at that time, however, the druggists were much criticized for their extortion, and the huge prices they charged for much worthless stuff may have been the origin of the erroneous idea, still prevailing among the laity,

that the druggist makes anywhere from 500 to 1000% on his wares. On certain drug bills of the above-mentioned period in England, are listed 4s. for a glass of wine of iron, 3s. 6d. for a "purge for his worship," 3s. for a son's purge, 4s. for a fumigating powder. It is known that as much as 30s. was paid for one pill, and 6£ for a pill and a decoction. The pharmacists made more out of their cases than the physicians. But as a matter of fact we all know that extortion is not a monopoly of druggists and that some doctors have been known to indulge in a little of it, by way of exercise and showing what they can do.

There is no doubt that Pharmacy is receiving less and less attention in the medical curriculum at the present time. Does this mean that pharmacy is being gradually considered less and less important, to the educated medical man, or does it mean rather that pharmacy is developing so fast that it can no longer be properly covered, even synoptically, in a medical course? In this connection, we may profitably repeat what Cushny has written in his classical work on Pharmacology. He says "another subject which now occupies a much less prominent position in medical study than formerly is Pharmacy, or the art of preparing drugs for therapeutic use. Some general knowledge of the methods used, is no doubt indispensable to the educated physician, but the details may be left to the pharmacist. Pharmacy will probably occupy a still more subordinate position in medical education, as the tendency to include only one or two drugs in a prescription becomes more wide-spread. As long as a dozen or more components went to make one mixture, it was of importance to know their solubility and their interaction, but with the decay of the complex prescription the study of pharmacy by medical students has certainly become less imperative."

This appears to be a true representation of the facts, and it may have the effect of separating the physician and the pharmacist more and more, if some counter-acting influences are not called into play. It seems to me that all Colleges of Pharmacy should be closely affiliated with medical schools, just as the Dental school is closely associated. Dentistry bears the same relation to surgery that pharmacy does to medicine, and therefore the latter two should never be allowed to drift apart. The medical student is not expected to learn any dentistry, and according to Cushny and most modern pharmacologists, he should not be required to learn much pharmacy, but in order that all these cognate and corelated branches in our great medical science and art may thrive best, individually and collectively, and that the members of these sister professions may have a more adequate knowledge of their interdependence and corelation, they should all be taught in our universities as far as possible under the medical college roof. Here the great ideals which form the moral and ethical foundation of medicine can be inculcated, in the minds of all who are engaged in it, or any of its branches. Every hospital should have its expert pharmacist. Questions are continually arising which only a skilled chemist pharmacist can decide. I saw a good example of this fact in reading an article in a French journal recently by Crouzon on the use of ethero-camphorated oil. It seems that on the continent of Europe the old camphorated oil is much used, by hypodermic injection, in the treatment of senile pneumonia, collapse adynamia from diverse causes, shock, peritonitis, etc. Large doses are employed, 20 to 50cc. more or less frequently repeated. These doses produce ugly lumps in the muscular tissues and even ab-

cesses occur. Cruzon desired to know whether these disadvantages were inevitably inherent in the treatment itself, or whether they could be obviated by altering in some way the solution of the oil. This question he put to Viron, the expert pharmacist-chemist of the Saltpetriere Hospital, where both of them had worked. Viron suggested an ethero-oily solvent for the camphor in the following formula:

Camphor	1 gm.
Anesthetic Ether	1 cc.
Alcohol-washed sterilized olive oil	10 cc.

This solution, which must be prepared in a special way to prevent evaporation of ether, was found to be an agreeable substitute for the old solution and no lumps were formed. This, of course, is only a trivial example, but it illustrates the fact that there are certain problems in hospital work which can only be solved by the pharmacist, who is in this respect the true co-worker of the physician.

On the continent of Europe the colleges of pharmacy are regarded, and properly so, as integral parts of the University, and kept in closer affiliation with the medical schools than is attempted in the United States. There is no lack in number of pharmacy schools in this country, however. Although in 1840 there were only three, now there are about fifty. The student of pharmacy is often a college-bred man and the standard of pharmaceutical education is being gradually raised as in the medical schools.

It should be kept continually in mind, that pharmacy is a branch of medicine, a true specialty, and its teaching should always be conducted in colleges closely affiliated with medical schools. It will be seen thus, that our contention is, that the relation between Medicine and Pharmacy is very close and must remain so. The science of medicine is founded upon anatomy, physiology and chemistry, while pharmacy is founded upon chemistry and physics. Progress in both depends, therefore, entirely upon progression in these fundamental sciences. Of course, from the standpoint of commercialism, there will be some disputes and antagonism between Medicine and Pharmacy, but from the standpoint of true science there can be but the closest union.

It is to be hoped that the standards of education in pharmacy will continue to be raised higher and higher commensurate with the developments in chemistry, pharmacy and medicine.

If this is done the pharmacist will become a still more indispensable associate of the physician especially in the direction of analytical and pharmaceutical chemistry and perhaps also pharmacology. Such meetings as the one we are holding to-night will do good, affording as they do an opportunity of emphasizing what we should not allow to be forgotten, the close relation between the sciences of medicine and pharmacy.

WHAT INSTRUCTION OUGHT MEDICAL COLLEGES TO GIVE IN PHARMACOLOGY AND THERAPEUTICS?

B. The Viewpoint of the Pharmacist.*

DR. BERNARD FANTUS, PROFESSOR OF PHARMACOLOGY AND THERAPEUTICS, COLLEGE OF MEDICINE, UNIVERSITY OF ILLINOIS, CHICAGO.

The honor having been conferred upon me to participate in this symposium by presenting the viewpoint of the pharmacist, I proceeded to obtain this information by sending out *questionnaires* to leading pharmacists all over this country, with the request that these blanks be distributed among pharmacists known to be competent to make the desired examination of one hundred prescriptions each. In this manner, I believe, we have obtained reliable information from a considerable number of high-grade pharmacists representing the various sections of this country and all varieties of prescription practice. As might have been foreseen, I obtained quite a variety of reports, which, however, when averaged up in groups of ten, gave strikingly similar results.

Before presenting the report, it might be well to ask ourselves the question, What does the pharmacist know about the kind of instruction that ought to be given in pharmacology? The pharmacist merely sees one of the results of our instruction, and, I am willing to admit, not the most important one; for, of course, prescription writing is not the end and aim of our course. Still, I believe it will be granted that prescription-writing is a good index of the thoroughness of the training given, since it not merely requires an acquaintance with the rules for writing a prescription, as well as with pharmacodynamics and with therapeutics, but also a knowledge of pharmacy and of chemistry. Prescription-writing is the keystone to the whole pharmacotherapeutic arch. It is because prescription-writing presupposes a sound knowledge in these various directions, that medical students, in general, consider it a difficult accomplishment; and, I am afraid, there are even some instructors in pharmacology, who feel themselves on thin ice when confronted with the necessity of writing prescriptions or of criticizing those written by their students. No one who is not thoroughly grounded in pharmacology and in materia medica can feel himself at home in prescription-writing. On the other hand, of course, the best pharmacist is incompetent to prescribe for any case of illness because he lacks the necessary knowledge of pathology, of pharmacodynamics, and of therapeutics. However, I believe it will be admitted that a good pharmacist is competent to express an opinion upon the thoroughness with which pharmacy and materia medica are taught in our medical schools. It was with this idea in mind that I sent out, from the pharmacologic department of the University of Illinois, a question-blank, which is given herewith, together with the average percentages yielded by an examination of 10,000 prescriptions by about 100 pharmacists in various sections of this country.

* Presented at the Second Annual Session of the Federation of State Medical Boards of the United States.

REPORT ON THE EXAMINATION OF 10,000 CONSECUTIVE PRESCRIPTIONS.

a. Written in English.....36
b. Use of poor Latin.....18
c. Almost illegible.....4
d. Use of metric system.....a small percentage
e. Number of ingredients
 1. Less than three.....46
 2. More than five.....11
f. Proprietaries.....24
g. Specified preparations.....11
h. Incompatibilities.....2
i. Over-doses and errors.....1
j. Has the quality of prescription-writing improved or deteriorated within the last ten years?.....Improvement reported by 55 *per cent.*.
 In what respects?.....More U. S. P. and N. F. preparations used. Deterioration reported by 20 *per cent.*
k. Other remarks.....“Doctors have an insufficient knowledge of pharmacy and prescription-writing” reported by quite a number.

The first point shown by this investigation is that over one-third of all prescriptions are written in English; and that almost one-fifth are written in poor Latin. In view of the fact that, no doubt, all medical students are taught to write prescriptions in Latin, it is evidently a rather poor result that less than one-half of the prescriptions written are in correct form. We note from the report that four *per cent.* of the prescriptions are “almost illegible.” Of course, there is no excuse for any of them being written so poorly; but, in view of the popular idea regarding the bad chirography of physicians in prescription-writing, and the jokes levelled at the medical profession on account of this, the showing seems to me remarkably good. I am wondering, however, whether four *per cent.* of the checks on banks, written by physicians, would be reported upon as almost illegible.

The metric system is not yet used to any extent in this country. This is unfortunate. The existence of the two systems of weights and measures side by side is surely an abomination. The use of one or the other must be discontinued; and the sooner this is done the better. Now which one shall it be? Science says the metric system is the only one fit to survive; it is chiefly the force of inertia that maintains the other. The medical students in the majority of our schools are embarrassed by being taught prescription-writing in the metric system in their courses in pharmacology, and by finding their clinical teachers in the practice of medicine and in the specialties still using the old system. Would it not be possible for our revered old medical teachers to adopt the new system, even at the expense of some exertion and vexation on their part, in order to spare the host of those entering the profession the difficulty and annoyance of learning both systems, and possibly mastering neither? I believe resolutions are in order among all the faculties of our medical schools, that henceforth only one system of weights and measures shall be used by all the members of the faculty and that this system shall be the metric system. I am wondering whether this great and powerful national body could do something to save our students the necessity of learning the use of two systems of weights and measures.

Poly-pharmacy is defined as the prescribing of too many medicines, especially

in one prescription. Surely more than five is too many. Our report shows that poly-pharmacy is still practiced to the extent of eleven *per cent.* On the other hand, we ought to congratulate ourselves upon the fact that almost one-half of all prescriptions written are comparatively simple in composition, containing less than three ingredients.

We now come to perhaps the most significant portion of the report, namely, the extent to which proprietary medicines are prescribed. While I am not narrow enough to believe that proprietary medicines should never be prescribed, surely twenty-four *per cent,* the figure shown in the report, is too high to represent a desirable condition. It is somewhat of a disappointment after all that has been said and written against the use of proprietary medicines, to discover that one prescription out of every four still calls for proprietaries. I find that pharmacists, in general, base their reply to the question whether prescription writing has improved or deteriorated, upon their experience in the use of proprietaries. Bearing in mind that most of these reports come from pharmacists, who have been prominent in the so-called "U. S. P. and N. F. Propaganda," and who, probably, have concentrated their propaganda upon the physicians whose prescriptions they receive, the figure in the report is probably too low to represent the condition existing in general. Proprietary medicines, I take it, owe their existence to a combination of factors, none of which is of credit to either medicine or pharmacy. No one will dispute the conclusion that, if pharmacology, using the term in the widest sense, were properly taught, the use of proprietary medicines would reach a very much lower percentage. It is unfortunate, by the way, that no better agreement exists on the meaning of the term pharmacology. The proper definition is the one accepted by the Chairman of this meeting, namely, that it includes the study of *all* that is known about drugs; and not merely the study of the action of drugs upon living forms, as it is defined by some. For this portion of pharmacology the term pharmacodynamics should be used. It is instruction in pharmacology in the narrow sense, instead of in the wider sense, that is responsible for the helplessness on the part of the graduates of some of our best schools, when it comes to prescription-writing.

The use of specified preparations denotes a lack of confidence in the pharmacist on the part of the prescribing physician. I am glad to note that it does not exceed eleven *per cent.*

That incompatibilities do not exceed two *per cent.* is perhaps somewhat gratifying. Though over-doses and errors do not exceed one *per cent.,* that number even is too great, considering the seriousness of the possible issue. It shows the advantage of the services of the pharmacist in safeguarding us and our patients against errors.

On the question whether prescription-writing has improved or deteriorated, my correspondents are divided. About fifty-five *per cent.* report improvement, mostly in respect to the prescribing of fewer proprietary medicines. Twenty *per cent.* report deterioration, and the balance of my correspondents do not commit themselves on this point. Quite a number, however, note, under "other remarks" that doctors have an insufficient knowledge of pharmacy and prescription writing. That this is quite a general opinion on the part of pharmacists may be judged from several papers that have been written on this subject within the

last year. I may mention R. H. Needham's paper on "Do Physicians Understand the Fundamentals of Prescription Writing?" presented before the Nashville meeting of the American Pharmaceutical Association in 1913, in which he arrived at a negative conclusion. I would also like to call your attention to a paper by L. E. Sayre, on "Materia Medica in Medical Colleges," published February, 1914, in the *Journal of the American Pharmaceutical Association,* in which he points out that this teaching is deficient.

After all, however, pharmacists do not see our worst failures in the teaching of prescription-writing. I am convinced that a certain proportion of our graduates, on entering practice and finding themselves incompetent to write prescriptions, solve their problem by not writing prescriptions at all, dispensing their own remedies, with all the evil results of such practice.

Summing up our findings, it becomes evident that there is need for considerable improvement in prescription-writing. This could be secured if it were realized that prescription-writing cannot be taught by lecturing or by demonstrations; that the students must be drilled in prescribing. I believe that the best results can be obtained, if a course on pharmacy and prescription-writing be given before the work in pharmacology is taken up. The students should be made familiar, in this course, with the various classes of pharmaceutic preparations and their prescribing. Then, when the student enters his course in pharmacology he is ready to write prescriptions from the very beginning; and he ought to be required to write prescriptions for each of the important drugs as they are studied, paying special attention to methods of pleasant and efficient administration. When the student finally advances to the study of therapeutics he should be required to write prescriptions from the standpoint of the effect. Finally, if the clinical instructors would do their duty and require the students to write prescriptions for the remedies needed by the patients treated in the hospital and in the dispensary, our students would leave our medical colleges well trained in prescribing.

There are two ways in which state medical examining boards could bring about improvement in prescription-writing. First, by restricting their examinations to the "List of Useful Drugs," published by the American Medical Association, or, if this list does not suit them, to any other list they may choose, and by publishing this list so that teachers in this branch may be able to concentrate their students' energies upon the really useful and important drugs. With the limited time at our command, we can only do one of two things, either give our students a superficial and therefore useless knowledge of a large number of drugs, or, a thorough acquaintance with a relatively small number. Surely the latter would be much the more profitable course; this we would pursue, if the state boards would help us by giving us a list of drugs to which they would confine the examinations. Secondly, by requiring candidates to write actual prescriptions in the examinations. This would serve as a wonderful stimulus to teachers and students alike to perfect themselves in the art.

THE MONASTIC DISPENSARIES OF THE MIDDLE AGES.

LEO R. A. SUPPAN, M. D.

According to ancient tradition the systematic practice of medicine and pharmacy reached a high stage of development in Egypt, whence it passed to Greece and from there to Rome. With the extinction of the old Roman empire in the sixth century, came a subversion of the ancient social order in which the physicians shared. The medical practitioners representing the Graeco-Roman school became extinct. But many of their teachings continued to linger among the lower classes, to be ultimately transformed into an unreasoning and grotesque folk-medicine, while the real medical science, such as it was, became the heritage, in Western Europe, of the Monks, who, for nearly four centuries exercised it as their exclusive monopoly.

It was the Benedictines, particularly, who kept alive in the earlier centuries of the middle ages the body of medical and pharmaceutical studies and practice. When St. Benedict of Nursia established his monastery at Monte Cassino in 529, one of his rules was that the monks should devote such time as was not taken up by their religious duties to the collection, study and copying of ancient manuscripts. There is still in existence a letter from the learned Cassiodorus, statesman, writer and monk of the sixth century, addressed to his brethren, in which he recommends them to study diligently the works of Hippocrates, Galen, Dioscorides, Caelius, Arelianus and other Greek and Roman writers on medicine and materia medica; and he exhorts them to become acquainted with all useful plants, to familiarize themselves with the compounding of drugs and to inquire into everything that may be of benefit to the sick and afflicted who take refuge in the monasteries. Naturally, all the monks were not of equal learning; there were some who understood Greek, and these made translations into Latin, compiled lexicons and wrote commentaries; Cassiodorus recommends those who are not familiar with the Greek language, to read the works written in that tongue in translation. Those brothers who had no great aptitude for learning were employed in other useful occupations, many of them finding a place in the *scriptoria*, or writing-apartments, where they busied themselves with the copying and illumination of manuscripts, many of which have come down to us, and are, to-day, highly prized objects in the great libraries and museums of Europe. It is to the rapid and extensive multiplication of the Benedictine monasteries, subsequent to the founding of the parent house at Monte Cassino, that we owe our possession of many of the most precious works which were the fruit of Greek and Roman genius; for every monastery, large and small, was a busy work-shop, where the transcriber was at work in his quiet occupation.

The monasteries in their first inception were places to which the pious might retire from the vanities of the world and devote themselves to religious contemplation and the prescribed ceremonies of the Christian church; but they soon added another important function, that of extending hospitality to travelers, both of high and low degree. Every one had its guest house, where refuge with accompanying entertainment was furnished. No charge was made, but the guests were

expected to present some token of appreciation according to their means, upon taking leave. Rooms which were set apart for the care of sick monks also received the poor of the neighborhood, who were attended by the physicians in charge of the conventual infirmaries and dispensaries. Moreover, in the absence of medical schools outside the convent walls, the monastic physicians were called to attend exalted personages at their own residences, often many miles away, upon which professional expeditions they were usually accompanied by assistants who were pupils and who prepared the required medicines under the direct supervision of the doctors. In some cases the physician, when called to a distant patient, carried with him the remedies already prepared. An instance of this kind is related in the *Chronicon Monasterii Cassinensis,* as follows: In the eleventh century, there lived in Monte Cassino, a monk named Alfanus, who was distinguished for his scientific mind, and his attainments in the healing art. On one occasion the Abbot, Desiderius, paid a visit to the pope, and being ill, he took Alfanus with him in the capacity both of friend and medical attendant. Alfanus took with him a number of medicaments, which he had prepared beforehand, an indication that there existed in the monastery, a laboratory of some kind, in which they were made. One of the inmates of Monte Cassino, at that time, was Constantinus Africanus, whose name is indissolubly linked with the famous medical school of Salerno, the first secular institution of its kind in western Europe.

Berendes, in his work, entitled, "Das Apothekenwesen," states that Dr. Albers, the keeper of the Archives at Monte Cassino, expressed to him the opinion that Constantinus was the first to arrange the monastic dispensaries according to a definite plan.

In a monograph entitled, "Wilhelm der Selige, Abt von Hirschau" (William was elected Abbot in 1071), Kerker confirms the surmise that the early monasteries contained a pharmaceutical laboratory and dispensing department of some kind. He shows that in the Benedictine house of Hirschau, situated in the Black Forest, there existed an infirmary or hospital over which presided an *infirmarius* or *armarius,* who was always a priest, and who had at his disposal as many assistants as he required to discharge his duties properly. In the infirmary the sick were bedded on rush mats, kept scrupulously clean. In the middle of the monastery was a covered space with an opening in the center, where blood letting was performed and the sick had their diseased limbs washed and anointed. It was also used as a sort of laboratory for preparing medicines. Every day the *infirmarius* made requisition for the various articles which he required for the sick in his care. But he kept on hand in his *armarium*, which we may translate "medicine chest," certain herbs, spices and other drugs;—cinnamon, pepper and ginger are specifically named,—which were to be held ready for cases of emergency. Another of his duties was to make the nightly round of the hospital and to see that the drinking-cups of the patients were filled, so that they should not suffer thirst. It is evident from this account that the office of chief infirmarian was an important one, and combined the functions of head physician and head pharmacist.

The title *apotecarius* (apothecary) appears to have been used at a very early date as equivalent to *armarius*, i. e., Keeper of the medicine chest. In his work, "La Pharmacie en Poitou," M. Pierre Rambaud, states that he found the name "apotecarius" in a number of Poiteven title deeds dating from the end of the tenth

century; at the bottom of a deed, drawn in 967, occurs the signature of a certain Salomon, a monk, who appends to his name the word "apotecarius." In 976, the signature of the same Salomon is again found, and this time he calls himself *subdecanus,* or vice dean. In a document of the year 985 occurs the signature of a "Rotbertus, apotecarius," which follows immediately after that of the Count of Poitou, the Abbot, the treasurer and the dean, and precedes thirty other signatures. M. Rambaud cites other cases, all showing that these physician-pharmacists held high stations in the monastic houses, and were men of learning and great administrative ability.

As there were no lay medical schools in the early times of which we are writing, the medical education of the monks who intended to devote themselves to the practice of it, must have been imparted within the monasteries themselves. It was undoubtedly wholly of an empirical nature. The pupil, one may suppose, accompanied his master to the bedside of the patient where he listened to a description of the symptoms and heard the diagnosis, all of which he committed to his tablets for later study; he probably also assisted in the preparation and application of bandages and, under the watchful eye of the master, compounded the necessary medicines. In this way he became acquainted with therapeutics and stored his memory with a vast number of recipes. But he also acquired an excellent first-hand knowledge of the character, properties, uses, and perhaps, cultivation of a number of medicinal drugs, for the monasteries possessed, as we shall see later, medicinal gardens, in which the plants which furnished the bulk of the medicines used in the infirmaries were cultivated. The pupil gained his theoretical knowledge from the works of the Greek and Roman physicians, which he was required to read diligently and, unquestionably, he had to learn by heart the prayer which invariably accompanied the administration of a medicine. Pathology, of course, was a non-existent science in those times.

Every monastery possessed its own formulary or collection of recipes for medicaments of various sorts, and it is astonishing how vast a number of these have come down to later ages. They were copied more or less literally from the ancient writers and were accompanied by prayers, or rubrics where prayers were to be said, while the medicine was supposed to be taking effect. I conjecture, that many of these recipes were embodied in the popular "household medicine books," which were so popular in the seventeenth and eighteenth centuries, and some of which survive at the present day in out-of-the-way corners of Europe.

Toward the end of the twelfth century the monastic medical schools began to lose considerable of their importance, in consequence of the establishment of the medical faculties in the great universities of Paris and Montpellier, to which students streamed from all over Europe. The faculty in medicine at Paris, was probably established before 1160, and at Montpellier instruction in medicine was begun in 1181.

A curious document has come down to us from the ninth century which gives an idea of the arrangement of the medical department in the mediæval monasteries, and which may be fittingly described here.

In the northeastern part of Switzerland there lies only a few miles from the Lake of Constance, the town of St. Gallen, or St. Gall, the chief town of the canton of the same name. It is a thriving place with some forty thousand in-

habitants, and is important for its textile industry. The tourist who is possessed of an historical imagination, and who visits Switzerland more with the purpose of evoking the romantic past, rather than to study modern social and commercial conditions, finds it worth while to stop here for a few days and examine what remains of the old abbey, a monastery founded in 720 by St. Othmar, on the rules laid down by St. Benedict.

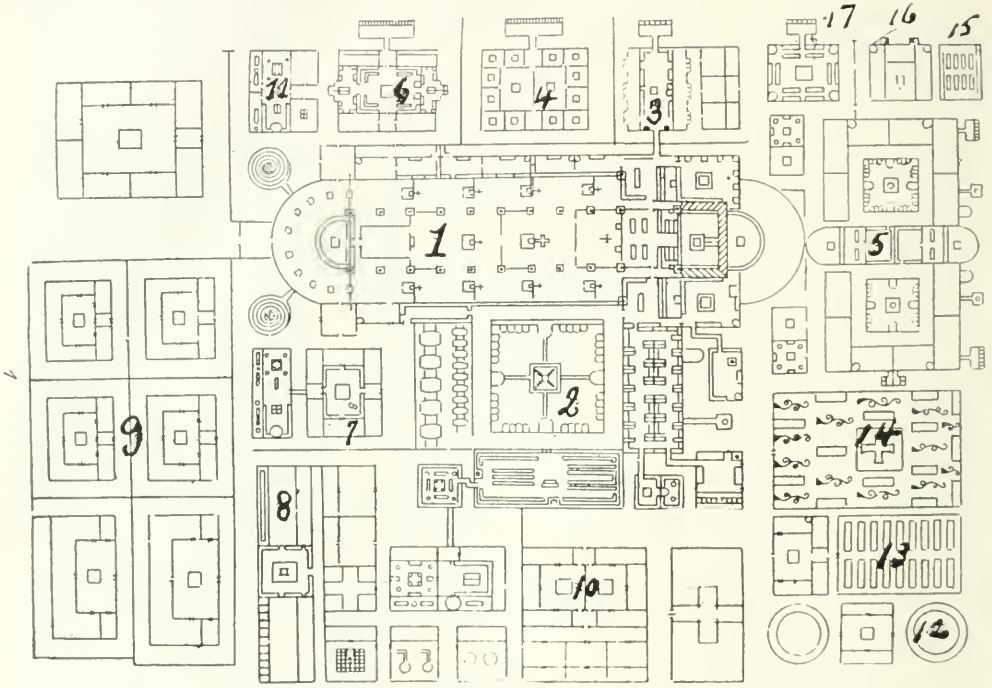


FIG. 1.

General plan of the Monastery of St. Gall in Switzerland, from a copy drawn from the original and published in Brockhaus' Bieder-Atlas.

1. The Monastery church.
2. Cloisters for the monks.
3. Abbot's residence.
4. School for children of the laity.
5. Chapel for the novices.
6. House for the reception of guests of the higher classes.
7. House for the reception of poor pilgrims.
8. Buildings where corn was ground and provisions stored.
9. Stables for domestic animals and living apartments of lay servants.
10. Living apartments for laborers of various kinds.
11. Monastic kitchen, bakery, and brewery.
12. Poultry yard.
13. Kitchen garden.
15. Medicinal garden.
16. Dispensary and pharmaceutical laboratory.
17. Bleeding-house.

In the year 613, or thereabout, a pious recluse named Gallus or St. Gall, a follower of St. Columba, left Ireland on the destruction of the famous Irish abbey of Bangor by the Danes, and established his hermit's cell in a dense forest, which reached from the Lake of Constance to the Santis Mountains. Here he devoted himself to missionary work for the conversion of the half barbarous tribe of the Alemanni, in which he was so successful, that in the course of but a few years, huts and other little buildings sprang up on the site of his labors. These rude settlements formed the nucleus of the great monastery and the town bearing the Saint's name, which grew up and flourished under its walls. The abbey became

very wealthy through the gifts of pious well-wishers and, down to the end of the eleventh century, was the site where literature and the sciences, such as they were in the middle ages, were assiduously cultivated and flourished under the liberal patronage of learned abbots and other benefactors of the convent.

To the student of pharmaceutical and medical history, the abbey of St. Gall is of particular interest, from the circumstance that in the year 830 the abbot Gozbert conceived the idea of reconstructing the monastery buildings and entrusted the devising of a suitable plan to Eginhard, it is said, the architect of Charles the Great. This plan not only gives us a clear idea of the arrangement of monastic settlements as they were deemed suitable in the earlier period of the middle ages, but it also shows us the provisions made for the care of the sick, and the source

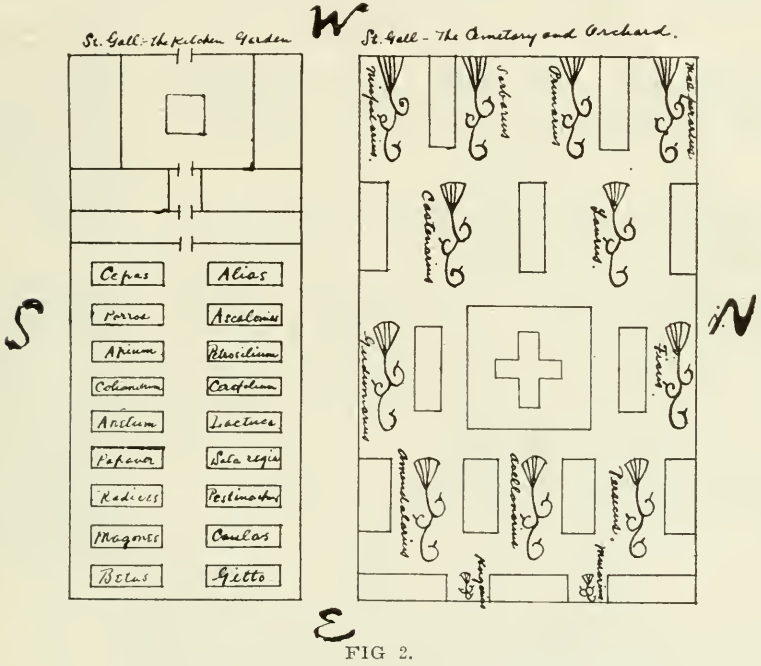


FIG 2.

The kitchen garden and cemetery at St. Gall, after a sketch by J. Berendes, published in the Pharmazeutische Post. The kitchen garden is to the left in the plan and the cemetery with orchard to the right. The meaning of the terms used in this plan is explained in the text.

and preparation of medicines for the relief of their affliction. There is some doubt as to whether the abbey was really reconstructed according to this plan, for, in the Napoleonic era, the foundation became much enlarged and many of the buildings then existing were modified, some being turned over to the government for the accommodation of public offices and others transformed into dwelling houses. The original plan is still in existence and consists of a sheet of parchment, sewed together of four skins, the whole about three and one-half feet long and two and one-half feet wide, the lines being drawn in red ink. It was published in *fac-simile* by Ferdinand Keller at Zürich in 1844, with explanatory notes, and by Professor Willis, in England in 1848.

The plan shows a complex of buildings about four hundred and thirty feet in

length and three hundred feet in width, the center of which was formed by the great conventual church, two hundred feet long, together with its cloisters, refectory and other buildings designed for the monks alone. About this nucleus were grouped the abbot's residence; the guest houses for the reception of strangers—those for visitors of high and low degree being separated—the school for the children of the laity, the school for those who intended to become members of the order, (*oblati,*) the kitchen, bakery, brewery, the workhouses where corn was ground and fruits were dried, a kitchen garden, an orchard, a garden for the growing of medicinal plants, an infirmary, stables and stalls for domestic animals, sleeping places for servants and laborers of various kinds, and other structures necessary to the domestic economy of the monastery. In short, it represents a

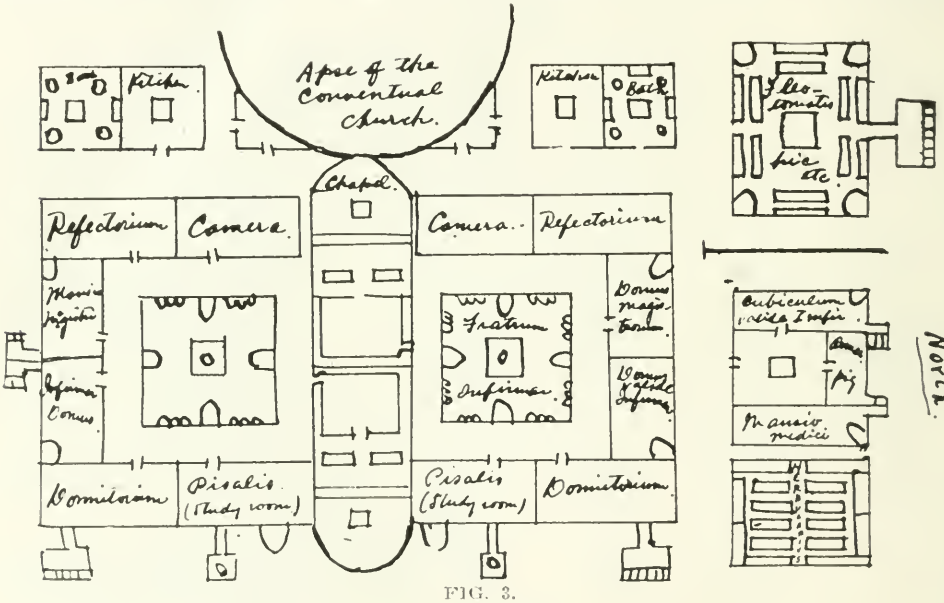


FIG. 3.

Plan of buildings to the north of the orchard. The arc of circle at the top is the apse of the monastery church represented in figure 1. Adjacent to this is the double chapel (the long oblong with rounded ends), one-half of which was the place of worship for the novices, and one-half for the inhabitants of the infirmary. The inscriptions are explained in the text. To the right are the medicinal garden (lower right hand corner), the dispensary and, beyond a wall, the bleeding house.

city *in petto,* all in accord with the rule of St. Benedict that the conventual settlement should itself produce everything for its needs, in order that it might be as nearly independent of the outer world as possible. The general plan is shown in figure 1.

What interests the pharmacist particularly in this plan is the group of buildings and gardens to the east of the apse of the conventual church. In the south-east corner are two enclosures of a circular form for poultry, between which lies the poultry keeper's house, represented in the general plan by a rectangle nearly a square. To the north of this is the kitchen garden with the gardener's house at the west end of it. This enclosure is represented in figure 2, together with the cemetery-orchard.

The identity of the plants indicated in the plan of the kitchen-garden are in some instances open to conjecture. A. Tschirch, in his *Handbuch der Pharmacognosie* gives the following modern equivalents for them:

Cepas—Allium cepa.
Porros—Allium porrum.
Apium—Apium graveolens.
Coliandrum—Coriandrum sativum.
Anetum—Anethum graveolens.
Papaver—Papaver somniferum.
Radices—Raphanus sativus.
Magones—Daucus carota.
Betas—Beta vulgaris.
Alias—Allium sativum.
Ascalonias—Allium ascolonicum.
Petrosilium—Petrosilinum sativum.
Cerefolium—Scandix cerefolium.
Lactuca—Lactuca sativa.
Lata regia—Satureia hortensis.
Pestinachus—Pastinaca sativa.
Caulas—Brassica oleracea.
Gitto—Nigela sativa.

To the north of the kitchen-garden, the right of the plan in figure 2, is an enclosure which served both as a cemetery and orchard. In the middle is a huge cross upon which the architect designed the following inscription to be placed:

Inter ligna soli haec sanctissima crux est,
In qua perpetuae poma salutis olent.

(Among the trees of the earth the cross, on which the fruits of perpetual salvation shed their perfume, is the most sacred.)

Hanc circum jaceant defuncta cadavera fratrum
Qui radiante iterum regna poli accipiant.

(Around this [i. e., this cross] shall lie the bodies of the brothers, by whose glory they will gain the realm of heaven.)

The arabesques in this plan represent thirteen species of nut and fruit trees. The names of these with their equivalents are:

Mal perarius—pear tree.
Prunarius—plum.
Sorbarius—checkerberry tree (*sorbus domestica.*)
Mispolarius—medlar.
Laurus—laurel.
Castenarius—chestnut.
Ficus—fig.
Guduniarius—quince.
Persicus—peach.
Avellanarius—hazel nut.
Amendalarius—almond.
Murarius—mulberry.
Nugarius—walnut.

It is probable that the planting of these trees in the cemetery served a two-fold purpose:—they were decorative and at the same time useful.

North of the cemetery is a group of buildings arranged in quadrangular form about a double chapel. The southern half of this group contained a school for the education of the novices, that is, those who were preparing themselves for the monastic life, and a part of the chapel is also set aside for them. The plan (Fig 3) shows the dormitories, refectories, study rooms, (*pisalis*), and bath-house and kitchen.

On the other side of the chapel is a quadrangle inside of which is a large square building marked *Fratrum infirmarium*, or infirmary for the monks. (The infirmary, it may be remarked *en passant,* was not only a hospital in the modern sense of the word, but also served as a refuge for monks whose age or other infirmities incapacitated them from taking part in the devotional exercises and other occupations of the monastery.) In the block around the infirmary are a refectory, a living room, study room, dormitory (*domus magistrorum*) and a chamber marked *Domus Valide Infirmomum,* or house of those dangerously ill.

But the row of rectangles to the north of the large block of buildings just described is what interests us most. (Numbers 15, 16 and 17 in figure 1.) There are three of them, two being grouped together in the extreme north-east corner

and separated from the third by a partition, probably a stone wall. (The plan of these is shown in detail in figure 4.) The one standing by itself, bears the inscription, "Fleotomatis hic gustandum et potionariis." The word "Fleotomatis" has been conjectured by Berendes and others to be a misspelling of "Phlebotomatis," and the inscription would mean that this building was designed for the use of the phlebotomists (blood-letters) and the servers of purgative drinks. Bleeding was universally practiced as a panacea for innumerable ills during the Middle Ages, and the operation was followed by the administration of a purgative, invariably in the form of a decoction or infusion. It was the custom to bleed monks at certain intervals for the benefit of their health, as a hygienic measure. Mr. A. H. Thompson, in his interesting monograph on "English Monasteries," says in reference to this practice in mediæval England: "Each of the Augustinian canons of Barnwell was allowed to be bled once every seven weeks, if he so desired; he might even be bled once a month if his health demanded it, but in this latter case

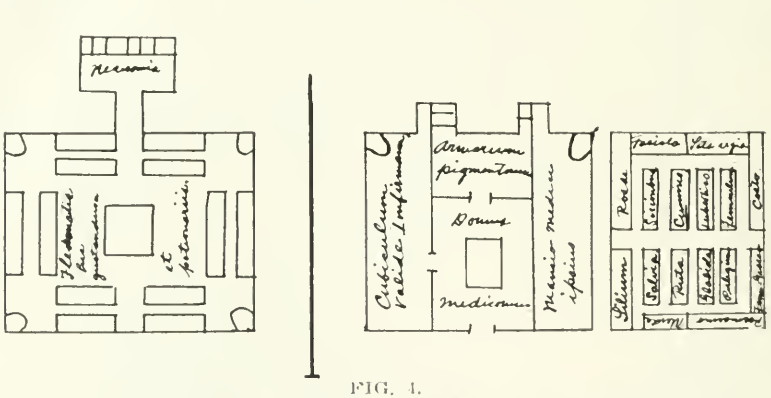


FIG. 4.

From left to right: The house of the blood-letters; the dispensary, with residence of the physicians and an apartment for patients requiring careful attention; the medicinal garden. For an explanation of the inscriptions, see the text. These plats correspond to those numbered 15, 16 and 17 in the general plan, figure 1.

was not allowed to take his furlough in the infirmary. The leave allowed at Barnwell lasted three days and canons were permitted during such periods to talk to each other and take walks within a limited area. In the Cistercian and Carthusian orders the rules were stricter; the monks were bled in batches, appointed by the friar at fixed seasons in the year,—four seasons in Cistercian, five in Carthusian monasteries."

It is natural that under these circumstances a special building should be set aside for this operation, and it was convenient to dispense the decoctions which followed the bleeding in the same apartments.

On the other side of the wall referred to is the strictly pharmaceutical department of the monastery. First comes a building, the house occupied by the physicians, divided into four apartments. Extending along one side is chamber marked "Cubiculum valide infirmorum." Berendes conjectures that the latter housed those suffering from infectious diseases, as it is separated from the general infirmary. I am inclined to the opinion that it was designed for patients whose

maladies were of such a nature as to require the immediate attention of the physician at any moment, since it is connected directly with the physicians' quarters. The room marked "Armarium pigmentorum" is the apothecary shop or dispensary. It was here that drugs were stored and compounded on the order of the chief physician by his assistants. Unfortunately we have no information as to the arrangement of this dispensary, but it is probable that according to modern ideas, the apparatus used was extremely crude, being confined to the pounding-mortar and infusion pots.

Adjacent to the Doctors' house is the medicinal garden, divided into sixteen plots. Here were grown the medicinal plants which constituted the vegetable materia medica of the monastery.

The names of the plants are indicated in the plan, and nearly all these have been identified with plants known to us. This medico-botanical garden deserves a paper for itself, and so only a brief notice can be given here, to the plants cultivated therein. The following table gives their names with the modern equivalents:

Lilium—*Lilium candidum.*
Rosas—*Rosa rubiginiosa,* sweet briar.
Fasiolo—*Dolichos melanophthalmos,* says Berendes.

The commentators are at variance as to the nature of this plant. The Greeks called a certain kind of bean which was cultivated in their gardens *Phascolus.* I have not been able to find *Dolichos-Melanophthalmos* in the books at my disposal. It was probably the common kidney-bean which, according to Dioscorides, was esteemed as a diuretic in ancient times.

Sata regia—*Saturcia hortensis* summer savory.
Costo—*Tanacetum balsamita.*
Fena greca—*Foenugreek.*
Rosmariño—*Rosemary.*
Menta—Probably *Mentha Crispa, aquatica* and *piperita.*
Salvia—*Salvia officinalis,* sage.
Ruta—*Ruta graveolens,* rue.
Gladiola—*Iris florentina* and *germanica.*
Pulegium—*Mentha pulegium,* pennyroyal.
Sisimbria—*Mentha crispa.*
Cumino—*Cuminum cymicum* cummin.
Lubestico—*Levisticum,* lovage.
Feniculum—*Fennel.*

The plan of St. Gall represents an ideal Benedictine monastery as it was conceived in the mind of the architect, but it is not certain that it was ever realized in its entirety, and so the medicinal garden just described may not be the one that actually existed. But we have an interesting document of the same period in which are described the medicinal plants that grew within this monastery. This is a little book entitled, "Herbularius," or the "Little Garden," and was written by a monk named Walafrid Strabus or Strabo. Strabus was born in 806 or 807, and received his education in the monastic school at Fulda, under the learned abbot Hrabanus Maurus. He was not only keenly interested in the phenomena of nature, but also possessed considerable poetic talent, and in his fifteenth year distinguished himself by some eulogistic verses addressed to Ebbo, Bishop of Rheims. At the age of twenty-eight he entered St. Gall, where his sincere piety and distinguished talents led to his election as dean of the monastery. In 842 he became abbot of Reichenau on the Untersee. He died July 16, 849. More than twenty works are ascribed to him, all written in Latin, of which the one of the greatest importance to the antiquary is a little book entitled, "Hortulus Monasterii Sancti Gallensis, Abbati Grimaldo Inscriptus" ("The Little Garden of the Monastery of

St. Gall, dedicated to Abbot Grimaldus.") The history of this work is somewhat peculiar. It was first given an extended publicity in a poem entitled "De Viribus Herbarum," and bearing the name of Macer Floridus as author, dating from the tenth century. It then fell into utter oblivion for a time, to be rediscovered in the sixteenth century. It was published in Vienna in 1510 under the editorship of J. Watter, a professor at the University there. This edition, which is now very rare, is regarded as the best.

In 1512, Watter's edition was reprinted at Nuerenberg in a more ornate form. We are told that the type used was Gothic and that the title page was decorated with the picture of a garden,—probably an idealization based upon Strabus' description. A certain Johannes Atrocianus or Acronius, professor of mathematics at the University of Basel, gave out an edition which was published in that town in 1527. There is also a Frankfurt edition which bears no date. Of modern editions, may be mentioned that of L. Choulant, which appeared in Leipzig in 1832, and of Reuss, Wuerzburg, 1834. In 1908, Professor J. Berendes published Reuss's text, with a translation in German, in the *Pharmazeutische Post.* The "Hortulus" is a poem consisting of four hundred and forty-four hexameter lines in which are described twenty-three plants cultivated for medicinal purposes in his time. The plants are described and their uses indicated. Not only this, but instructions are given for preparing the soil, sowing the seed and setting out young plants. The descriptions show a keen observation on the part of the author, and their conciseness reminds us that of prevailing in modern pharmacopœias.

The mediæval materia medica offers an interesting subject for study. It is not always easy to trace the plants which were grown in the convent gardens for the monks often applied fanciful names to them, based upon some real or imagined connection with the events recorded in sacred history. Thus we find, "Oculus Christi" for *Myosotis Scorpioides; "Rosa Sanctae Mariae" for Paeonia officinalis; "Lancea Christi"* for *Ophioglossum vulgatum; "Radix Sancti Spiritus"* for angelica root,—many of which are still given as synonyms for popular medicinal plants in European herbals of to-day.

Certain religious orders gained renown for certain special plants to the cultivation of which they devoted much care. The Carthusian gardens at Freiburg in the Breisgau, produced angelica of a fine quality. Licorice root from the Benedictine herb garden at Wurtzburg was highly prized. At a later period, when the process of distillation had come to be understood, the manufacture of essences and cordials engaged the attention of the monks, the well-known "Benedictine" and "Chartreuse" liqueurs which are still produced in our own day furnishing noted examples. Compound medicines were also prepared and later sold to the public who prized them highly. The best known is perhaps the *Eau des Carmes* or *Eau de Melisse des Carmes,* which was first compounded in the pharmacy of the Barefoot Carmelites in Paris in 1611. This preparation became a valuable monopoly of the monks in the course of the century, for they kept its formula secret and maintained its sale by judicious advertising of a sort. Of course, the apothecaries and manufacturers of secret nostrums were anxious to secure the formula, and innumerable experiments were made to ascertain its nature. Many "just as good" recipes were published, but none of them produced a preparation with the satisfying qualities of the original. Louis the Fourteenth, Fifteenth and Sixteenth

granted patents to the Carmelites on this preparation, each for limited periods. In 1780, however, when a new application for a patent was presented, the Paris School of Pharmacy opposed it; but a compromise was effected according to which the monks were to retain their monopoly in consideration of their paying a sum of about two hundred dollars yearly to the College. When the French Revolutionary government suppressed the monasteries in 1791, and confiscated their property, forty-five Carmelites of the monastery of Vaugirard established a company to continue the manufacture of the *"Eau des Carmes"* as a private commercial enterprise. It was provided that as the forty-five partners successively died, the property should pass into the hands of those who survived. The longest to live was Brother Paradise, who became sole proprietor and died in 1831. To the last the *Eau* was prepared on the premises where the forty-five projectors had started it.

The composition of this cordial was never divulged, but the chemist Baumé worked out a formula for a preparation said to resemble it very closely, which was adopted into the *Codex*. It called for balm (*Melissa officinalis*) freshly gathered and freed from the stems, two pounds; fresh lemon peel, four ounces; coriander seed, eight ounces; nutmeg, cloves, cinnamon, all crushed, of each two ounces; angelica root, dried, one ounce; alcohol, ten pints. The cordial was employed as a stomachic and was evidently an extremely pleasant one to take.

The convent gardens existed until late in the eighteenth century, one at Munich being mentioned in 1750. This fascinating subject tempts one into a wide digression; but it is deserving of a paper to itself and must be left to a future occasion.

After a time the monastic hospitals became decadent, for rank commercialism crept in. Certain monk-physicians became famous and were called from their monasteries to attend princes and other persons of high degree. The recompense they received was generous, and they were attracted to the lives of the laity, whose tastes and habits they adopted. They neglected the poor and devoted themselves to the wealthy for the sake of rich fees. In many cases they abandoned their monasteries altogether. Their example was followed by their subordinates of the cloister who adopted a life of vagabondage, and swarmed over the country selling "cure-alls" at extravagant prices and even dabbling in the teaching of their pretended medical secrets to anybody who would pay for them—and there were many who did. Berendes relates an amusing anecdote of a monk, real or pretended, who appeared at Erfurt in 1227 and advertised himself as a specialist in diseases of the eye. His "cure" consisted in delivering a blessing upon lumps of clay, which he then kneaded into a dough and smeared over the eyelids. He was accompanied by an assistant who wrote certain verses, supposed to be wonder-working, upon slips of parchment, which he sold as a panacea at a handsome profit. This precious pair was soon unmasked as a couple of swindlers and chased out of town. The scandal became so great, that in 1131 the council of Rheims forbade the regular clergy to practice medicine. The edict was reaffirmed by the Lateran council of 1139, and that of Tours in 1163. These prohibitions were launched against the monks in order to put a stop to a habit which had become quite common on the part of some of their number, of their leaving the cloisters, whereby they disgraced their order; but it did not apply to the orders of canons and the secular priests who continued to practice medicine and pharmacy for many years after without interference.

Another circumstance, which later aided in discrediting the monastery pharmacies in the eyes of the secular authorities was the competition into which they entered with the lay apothecaries. The precise date at which these latter first appeared is a matter of uncertainty, but it was probably about the twelfth century, although at that time they must have been under the absolute control of the physicians, who were also laymen. It is certain that in 1140 Roger, King of Sicily and Naples, issued an edict, designed to check the quackery of the itinerant monks, in which it was ordered that anybody who designed to practice medicine should subject himself to a "Judgment" (*judicio*) as to his qualifications. This was probably done on the representations of the physicians. The law promulgated by the Emperor Frederick the Second in 1241 adjusted more definitely the relations between physicians and apothecaries and made the calling of the latter a distinct branch of medicine, *not*, however, as is sometimes stated, an independent profession. The doctors of medicine were prohibited from owning a shop for the dispensing of medicaments, but they had full power to exercise supervision over the shops, to inspect them at fixed times and to examine candidates as to their qualifications. These provisions eventually led to friction between doctors and apothecaries, which has been bequeathed to the respective practitioners of our own times. I need refer only to a proposal made by certain physicians within the past few years, to issue certificates to such pharmacists as might be deemed worthy of the distinction in the eyes of the physicians in question, which certificate should be equivalent to the statement that only those druggists possessing it were qualified to dispense prescriptions.

The quarrel between the apothecaries and religious houses which maintained dispensaries became acute when, soon after their founding in 1534, the Jesuits established pharmacies in their houses, at first for the free distribution of medicines to the worthy poor, in connection with their hospitals. There are many documents in existence, chiefly in the form of letters from the Superiors to the members who acted as nurses, exhorting them to keep the hospitals well supplied with the necessary medicaments, but for use within the hospitals only. These orders were not strictly obeyed, for we read that after a while medicines were furnished gratis to the poor outside the walls and indeed, to anybody that asked for them.

This became a drain upon the finances of the houses, and it was found necessary to make a nominal charge for the articles dispensed. The medicines were sold at a low cost and were moreover, of excellent quality—two circumstances which created a large demand. The regular apothecaries, of course, objected bitterly to this state of affairs, and the Superiors, recognizing the justice of their demands, issued order after order, forbidding all commercial transactions in Jesuit houses as against the spirit and letter of the law according to which religious establishments were to act. But even the authority thus exercised was of little avail, for in a fragment of a manuscript letter dating from the beginning of the eighteenth century, we find it decreed by the Superior that all simples intended for filling prescriptions for *composita*, i. e., mixtures, must be purchased from an apothecary in the town and only in the quantities prescribed by the physicians—from which we are led to infer that patients sought the advice of the lay doctors, and took their prescriptions to the monasteries to be filled. Thus a means was

found for avoiding trespass upon the privilege of the apothecaries, and at the same time, preserving the existence of the monastery pharmacies. The latter, however, were doomed to destruction. The apothecaries appealed to the civil authorities to free them from this unfair competition. In 1776 the Elector Max Joseph of Bavaria issued a mandate prohibiting the dispensing of medicines in religious houses within certain limits. He states that complaint was made that the apothecaries were unable to maintain their shops in a state fit for the public good on account of the practice followed in monasteries and convents of selling medicines to the public without discrimination. The medicaments, he says, were prepared and dispensed by monks and nuns who were ignorant of their nature and unqualified to practice the pharmaceutical art; and he, therefore, ordered that the religious houses should close their shops in towns and within a circuit of two hour's distance where apothecaries carried on their business. Failure to observe this mandate was punished with a fine of one hundred ducats. This drastic edict brought forth a petition from the College of Jesuits at Ingolstadt, where a famous public dispensary had been maintained for many years. They claimed exemption from the ruling on the following grounds:

1. Their pharmacy had been in existence for one hundred years and Doctor Naderhirn, Court and Town Physician of Eichstaedt, had for more than forty years obtained his drugs therefrom, a testimonial to their excellence.

2. The pharmacy was presided over by thoroughly competent persons.

3. The Ingolstadt pharmacy was by no means responsible for the decay of the lay apothecaries; the claim that these suffer from the competition of the religious houses is in fact unsubstantial, for there are two in the town of Ingolstadt, who possess more than one shop and are well to do.

4. Whether or not the carrying on of an open shop by a religious order is in opposition to the rules governing such order is a question which the petitioners do not desire to discuss. They call attention to the fact that the practice is sanctioned in Rome and other countries, and they conclude by asking the Elector to confirm their privileges. What answer was given to this petition we do not know. With the dissolution of the order by Pope Clement the Fourteenth in 1773, the Ingolstadt pharmacy became secularized and passed into private hands. In France the circumstances were similar. As everybody knows the Jesuits were the first to recognize the medicinal value of cinchona bark. It was through them, that it was imported into Europe. Encouraged by their successful trade in this drug, they extended their operations and became importers of exotic drugs in general on a large scale. These they sold at retail through their various establishments, a practice which found imitation in other religious communities. The apothecaries prosecuted them and edicts were issued against the Jesuit drug shops, one of 1707 enjoining all convents from keeping medicaments, except for use in their own hospitals. But it was not until the advent of the French Revolution that the practice was finally stopped, when all conventual establishments were sequestrated by the Government.

So the monastic pharmacies arose, flourished, and declined as an independent institution. In those which continued to exist the needs arising with a new order of things, were fully recognized and the practitioners submitted cheerfully to the requirements imposed upon all who would devote themselves to the pharmaceu-

tical art. They pursued the prescribed course of studies, took the state examinations and received their diplomas which put them on an equal footing with their lay colleagues; and the adjustment was a happy one, as is proved by the excellence maintained in the conventual dispensaries in our day, both in Europe and in America.

A LAYMAN'S POINT OF VIEW.*

GOVERNOR W. S. HAMMOND, OF MINNESOTA.

It gives me great pleasure to come here this morning at the very beginning of your deliberations to bid you welcome, to greet you, and to express the hope that the work that you do here may be of benefit to the Pharmacists of the State, to the Pharmacists of the United States and to all the people with whom in your various capacities you come in contact. The pharmacist is a great deal more than the apothecary of old or the druggist of even more recent days. There was a time when the apothecary shop, the drug store, was a sort of gather-as-you-please place to gossip over the events of the day and incidentally and between times to compound various medicinal preparations. The work of the apothecary was a particular and technical kind of work and there was so little of it that the compensation was necessarily quite large. But there has come a great change in recent years. The pharmacist is the scientific man as was the apothecary of old. He is the technical compounder, the registered druggist, but he is more of a business man than his predecessors were, and because of that fact the people, those who trade with the pharmacist, have been the gainers. The whole calling itself seems to have taken on another form. I imagine there is not so much compounding to-day as there was a few years ago. Great pharmaceutical establishments do a great deal of the work that the old-time apothecary did. Now, under these changing conditions, it is very, very advisable, it seems to me, that there be frequent meetings for communication of ideas and thoughts relating to the business among the pharmacists of the state. The average pharmacist has become somewhat of a business man; he has always been to some extent a business man, but I am inclined to think that to-day he is more of a business man than professional man, while sometime ago, he was more of the professional man than the business man. Now, is there any danger growing out of this? Is there anything that you ought to think about in connection with this change, if I am correctly advised and my conclusions are warranted by the facts? It would be unfortunate if this old time-honored profession should become merely business. So much of the sentiment, so much of the romance would be taken away that we might feel somewhat sad at the change, but more than mere sentiment, more than mere romance—it would be another development of the dollar idea. I admire the successful business man. We cannot but be astonished at the great efforts of the captains of industry. We like the strong, pushing, virile business men who start with little or nothing, and build up gigantic enterprises, but they are business men. We

* Address delivered before the Thirty-First Annual Convention of the Minnesota State Pharmaceutical Association, February 9, 1915,—St. Paul, Minn.

would not want our lawyers, our doctors, our apothecaries, our clergymen, to be distinguished principally as mere business men. We like to have them remain in the realm of professionalism, and be as great and as useful in professional work as others are in the business field. Now, I trust that with these great houses compounding so many of the things that the apothecaries themselves compounded not many years ago, that we will not have a change in this line of work, and that the apothecary may remain the professional instead of the business man, realizing, of course, the necessity of good judgment and of business skill in the conduct of any business enterprise. There are very important matters connected with pharmacy that are wholly unrelated to the mere question of bookkeeping and income and outgo. We are all interested, and you are particularly interested, in the legislation tending to restrict the use of noxious drugs. Here is a line of endeavor that of course should be absolutely divorced from the business end of the work. Here is a question that appeals to you as professional men and as men who desire to adapt their profession to the best interests of their brothers and sisters, and any attempt, I fear, to connect this kind of legislation with the business end of the pharmacist's occupation and profession would tend to detract from the high professional standard that the apothecary has always had, and that the modern pharmacist should endeavor to maintain. I am not a pharmacist, but a mere observer. I have spoken simply as a layman in a general way. My purpose in coming here was not to deliver a lecture. I could not hope to impart advice to men and women like yourselves who have studied the subject for years, but I may in a way represent the layman who looks upon the pharmacist as the majority of laymen do—who wishes him well and desires to see the time-honored and highly-respected profession maintain all that is good in it, and push on to high and better results. I welcome this body here this morning. I repeat my greeting. I trust that you will accomplish much for yourselves and much for the benefit of your profession throughout the state and country. I thank you.

THE HARRISON ACT.

F. H. FREERICKS.

All comprehensive narcotic legislation is of comparatively recent origin. The first state in the Union to pass a law governing the sale of cocaine was New York, only twenty-three years ago. This was followed within the next five or six years by similar laws in all of the states. It is with considerable pride that we note all of these laws, as enacted in the various states, to have their origin with, or to have been enacted because of the strong support which they have received from pharmacists.

However, after their enactment, it soon became apparent that the narcotic evil had grown to such proportions that these laws in the different states were insufficient to control it. This was due in part to the inadequacy of the state laws, and in greater part to the fact that state officials were either unwilling, unable, or indifferent with reference to the enforcement of them.

It was about seven or eight years ago, that the matter of a general federal law

governing the distribution of narcotics was advanced for the first time. A few years later Dr. Hamilton Wright, who was at that time connected with the Federal Department of State and a representative of our government at the Hague Opium Conferences, became aware of the enormous amount of narcotics then being used in this country. It is reported that he resolved to secure, in some manner, federal legislation which would control the narcotic evil as it existed in this country, and I want to say to you that the federal law which is before you to-night comes to us primarily through the activity of Dr. Hamilton Wright. He was chiefly instrumental in its introduction in Congress. It then first attracted the greater attention of Pharmaceutical Societies, most of which went on record as favoring such a law. Congressman Foster, of Vermont, introduced the original bill, the underlying purpose of which was the control of narcotics, but however little was done toward securing its enactment, for several years. Then Dr. Wright with persistent effort, using his influence with men of standing and power, induced Congressman Harrison, now Governor of the Philippines, to introduce his bill first known as the Foster Bill, but now known as the "Harrison Act." Both Foster and Harrison had little to do with the drafting of the bill.

It was three years ago, that it became generally known that stronger effort was being made to enact a law of this kind. The American Pharmaceutical Association, then in session at Denver, decided to call a conference of the various National Drug Societies throughout the country for the purpose of coming to some decision in the matter. At the conference so called together there were gathered representatives from the various National Pharmaceutical Societies, including manufacturing chemists, and the National Wholesale Druggists' Association. They considered the bill in all its phases, and soon found that it contained an enormous number of impossibilities, not that it was the intent to cause unnecessary trouble, but because the man who had drafted it lacked the necessary practical experience to know how to make it meet the practical needs. Dr. Wright was persistent to have his draft adopted, and the bill was to be brought before the House on the next day. The National Drug Trade Conference proceeded immediately to formulate its objections and presented them at a meeting of Congressman Harrison's Committee arranged for that purpose. There were present at this meeting representatives of the American Medical Association, the Veterinarian Society, Dental Association, and representatives of various other National bodies connected with medicine and pharmacy. After the objections were presented, it became apparent to the Committee in charge, that the Bill, as it was, could not be, and should not be, enacted into a law. It was the decision of Chairman Harrison of the House Committee that Dr. Hamilton Wright and the Drug Trade Conference should together draft a National Narcotic Law, and that he would then see to its enactment. On the same evening and extending through the following days, the conference of the National Drug Trades met with Dr. Hamilton Wright, without coming to an agreement, and this resulted in many subsequent meetings. It should be mentioned that the National Drug Trade Conference at its organization decided that delegates representing all the National Societies interested in this law should be invited to attend its future meetings. I wish to say that in all the sessions that took place for two years thereafter, there were invariably present, representatives of the American Medical Association, who took part in the discus-

sion. I am free to say that, in my judgment, the representatives of the American Medical Association either directly or indirectly have been more largely instrumental in having this law passed as it is to-day than any one set of men constituting the Conference. The representatives of the American Medical Association most prominent in the discussion were Dr. Woodward, of Washington, and Mr. M. I. Wilbert.

Now, I do not mean to go beyond what I have said in speaking of the law and how it was secured, other than to say that Federal Narcotic legislation is, I believe, an essential thing, to supplement State Laws, in view of the fact that the narcotic evil has grown by leaps and bounds until to-day there is not a week passes but that at least 100 arrests for the violation of state laws, as they now stand, are made. It must be plain that, where there are regularly on the average 100 arrests weekly for the violation of a given law, there are many, many more times that many violations.

I have been presented to you as a member of the National Drug Trade Conference. I refer to that fact, because in what I am likely to say, I do not want to be misunderstood. I did have the honor of representing the National Association of Retail Druggists in the Drug Trade Conference, but I wish to say that the form of bill which has now become a law found the more or less willing approval of 14 members of said Conference,—two subsequently dissenting,—and did not find and has not yet found the approval of one member of that Conference, and that member is myself. I tell you this so that I may not be misunderstood. I am not prepared to defend in every respect the form of the law as it now stands, nor am I prepared to defend all the regulations that have been drafted under the law. But it seems to me that the question is, not whether we like the law or whether we like the regulations which have been drafted under the law, but *that we have the law, and we want to know what it is and how it applies to us.* While I am not prepared to defend every provision of the law, yet its aim I am prepared at all times to defend.

The law we are discussing this evening is known and will be known as an Act of Congress approved the 17th day of December, 1914. It will also be known as the Federal Narcotic Revenue Act. Its regulatory provisions are an incident to the taxing powers. The law contains twelve sections, the three last of which concern the government and its officials. To my mind, it seems, first of all, that the ninth section is the most important. It provides that any person who violates the Act is subject to a fine of not more than $2000.00, or to imprisonment of not more than five years, or both. This alone seems sufficiently important to awaken all of us to the necessity of complying with the provisions of the law.

In Section 1, the law provides that "Every person, partnership, association, company or corporation who produces, imports, manufactures, compounds, deals in, distributes, sells or gives away opium or coca leaves, or any compound, manufacture, salt, derivative or preparation thereof, and not specifically exempt, must, on or before the first day of March, 1915, register with the Collector of Internal Revenue of the district" and pay the special tax imposed for the period, March 1, 1915, to June 30, 1915, amounting to thirty-four cents. That means that every person who is in possession of these drugs with a view of supplying others, no matter in what form or under what circumstances, must be registered under this act. I

should here say that Section 6, by inference, provides that there should be included in the list of drugs specially named under Section 1, alpha and beta eucaine, or any synthetic substitute for cocaine. The field of synthetic substitutes for cocaine and eucaine, including novocaine and alypin, should be constantly in mind.

From now on, for the sake of brevity, I shall use the term "Doctor" to refer in a general way, not to doctors alone, but to dentists and veterinary surgeons, unless for some reason, it becomes necessary to specifically refer to one of them. I understand that the local Collector of Internal Revenue has distributed the Blanks for Registration among the doctors, but unless you have had such application, it is necessary for you to either go or write to the Collector of Internal Revenue for your District, and have him send you an application to register under the Federal Narcotic Act, and to have the necessary revenue stamp. I would suggest that you write for a requisition form upon which you will have to secure the so-called official order forms, which are also furnished by the Internal Revenue Collector. After receiving your application form, go to the Internal Revenue Office, or to a notary, to be sworn, then send it in together with the specified tax. If you see fit to make requisition for order forms, send an additional ten cents. The order forms are done up in tablets of ten forms each. Your remittance will need to be made in U. S. Money Order, cash, or certified check. Forty-four cents covers the tax until July 1, 1915, and ten duplicate order forms. After that date an assessment of $1.00 is made for the ensuing year, and ten cents for each ten order forms in duplicate.

Doctors must register but once, and that from their office. Druggists, however, are required to register from each separate place of business that they may conduct, and, under a ruling of the Commissioner, which I have, they are required not only to register for the purpose of dispensing on physician's prescriptions, but they are also required to register for the manufacture and sale of narcotics. In other words, a druggist must register under two separate provisions. Certain classes have been provided for, one for Doctors, Dentists, and Veterinarians. In another class belong the manufacturer and the wholesaler, and in still another class, the pharmacist who would sell only on prescriptions. The Druggist under above-mentioned ruling, which may be changed, will need to secure registration both for selling and manufacturing, and again for the purpose of selling at retail on prescriptions, so that each retail druggist, if he has but one store, will have to register twice. The doctor, druggist or dentist who may have an office and a separate residence should register from the office only, but if his office is not separate from his residence, it is, of course, necessary to register from his residence.

The law in Section 1 provides that employees who act within the scope of their employment, and are employees of registered doctors or druggists, do not need to be registered. That is important, because under Section 8 of the law, it is made unlawful for any person other than those who are registered to be in possession of any of the drugs, except in cases of certain exemptions, which will be later referred to.

Under Section 1, the law does not apply to County, State, or Municipal Hospitals, or Penal Institutions, and it does not apply to the Doctor who is engaged

therein, when so engaged. In other words, such county and municipal hospitals are not required to register under the act, and they may purchase the drugs and no record need be kept of the supply to such institutions. The Doctor who visits such *public institutions* is not required to make record of any of the drugs he may order therein, but in private hospitals, the Doctor is required to give to the person dispensing the drug, some authority for doing so. The best way to order narcotics in private hospitals would be to write prescriptions, and for the druggist at such hospitals to fill only under prescription. That applies to private institutions, and in private hospitals, it is always necessary, for the Doctor to make a written order *not to be kept by him,* but to provide a record to be kept by the person who supplies the drug in the house.

With reference to veterinarians, many, I believe, conduct hospitals of their own, and whenever this is the case, they are, under the regulations of the department, required to make a record of all the drugs they would dispense and use in their hospitals.

Under Section 8, possession of the drugs by unregistered persons becomes absolutely unlawful, except in cases of specified exemption, and when these drugs are found in the possession of any unregistered person, it is for that person to prove that he is in lawful possession of them. Possession is lawful when in the hands of a person acting within the scope of his employment. Possession for a registered person is lawful when found in the hands of nurses to whom they have been given by the Doctor, when they are used under the supervision of the Doctor, and only in such cases is possession of narcotics by nurses lawful unless they are registered. They must come from the doctor to the nurse for use in administering to the patient of that doctor, and in no other way.

Possession is lawful for those who have it because of a doctor's prescription, or to whom as a patient it has been given by the doctor.

There is one very important exemption with reference to preparations that contain some of these drugs in minimum quantities, and I would make clear that this includes preparations on physician's prescriptions. This exemption is with reference to preparations that contain, in the fluid or avoirdupois ounce, not more than 2 grains of opium, nor more than a ¼ grain of morphine or its salts, nor more than ⅛ grain of heroin, nor more than 1 grain of codein. In other words, an ounce may contain not more than two grains of opium, not more than a quarter of a grain of morphine, or ⅛ grain of heroin, and not more than a grain of codein. If it *does* not contain more than these quantities, then the act does not apply in any shape or form. Preparations for external use that are in good faith intended for external use may contain any quantity of opium, or any quantity of the derivatives of opium. Neither the doctor nor the druggist is required to make a record of such distribution. It is a question as to whether suppositories should be regarded as being for external use. I do not believe that the pharmacist would be allowed to sell suppositories unless upon a doctor's prescription. No preparation intended for either external or internal use may contain any cocaine, alpha or beta eucaine, nor any substitute for them, unless it be on doctor's prescription or record.

There is an exception with reference to decocainized coca leaves, or, in other words, the leaves or its preparations from which all cocaine has been removed.

Section 2,—the most important section of the law, in so far as it concerns us all, provides that the sale and distribution of the narcotic drugs may now be made only on an official order form excepting certain exemptions. There can be no sale by the manufacturer or by the jobber to either the doctor or the druggist, unless it be on this official order form, which has been specially drafted by the internal revenue department, and is supplied by the collector of internal revenue. It will contain your registry number and bear your name, and you will retain this number throughout the period of registration and also when you re-register. Each order form, when filled out, must carry the date of the order, also your signature, registry number and address. It must be made in duplicate, and the original is sent to the manufacturer, to the jobber, or to the pharmacist, and must be preserved by them for two years. It must be filed by the person or firm filling that order in its regular numerical order. For instance, all orders from a person registered as No. 95 must be filed together, no matter when they come. The doctor or druggist who places the order, is required to keep his duplicate when order is filled, for two years in a place readily accessible for government officials who are charged with the enforcement of the act.

All sale and distribution of narcotics, as stated, must be upon official order forms, excepting in instances governed by sub-section (a) and (b) of Section 2. The drugs that the doctor, dentist, or veterinarian supplies to his patients upon whom he *personally attends,* need not be recorded on the official order form. Under a regulation which the commissioner has promulgated it is ruled by him that personal attendance *means personal visits,* and the doctor is required to make and keep a record of all the drugs that he would dispense, to his patient, at the office, but he need keep and make *no record when he visits the patient at his home.* In other words, the doctor is not required to make or keep a record when called to attend a patient at the patient's home. He may there dispense all the drugs necessary without being required to make or keep a record. But when the doctor dispenses in his office, he must make a record of that he dispenses. He may select any kind of record-book that suits his fancy, but it must be kept specifically for that purpose, and he must enter therein the name, and address of the patient, and the date, and quantity of the drug dispensed to that patient. This applies also to the administration of hypodermic injections of narcotics in the office, but not at the bedside of the patient. This must be done regardless of the quantity that may be administered. This applies to dentists as well. Every time a dentist uses cocaine or a synthetic substitute in a dental operation, he will have to make a record of it in his office. I have already stated that when the doctor prescribes these drugs in private hospitals, he must provide the means of recording to the person who gives the drugs. The most ready way is to write a prescription to be filed by the pharmacist, or it can be noted on the chart containing the patient's hospital record. Private hospitals are required to show what they have done with narcotics bought on official order forms, and there will be no way to do this unless the doctor gives them some written order.

Now, I have stated that any kind of book that suits you, can be used as a record book, but it must be used exclusively for recording the distribution and the dispensing of these drugs. I would suggest that it be used also to keep therein your

duplicate copy of orders that you may give, and also an inventory to which I will refer later.

After the first day of March, no pharmacist will be permitted to fill your prescriptions for these drugs unless you are registered under this act. The prescription which you write must contain your registry number, your name and address, the name and address of the patient, and finally, of course, the quantities ordered, and the doctor's full signature. Pharmacists may not fill prescriptions wherein these requirements have not been fulfilled, except, of course, with reference to compounds that may be ordered on prescription which contains not more than the minimum quantities allowed.

The question has been raised as to whether a doctor might not, after having written a prescription meeting all the requirements of the law, order such prescription refilled in writing. This is a matter that has not been ruled upon. However, I should think that, if the prescription-blank upon which the doctor would order a re-filling of the first prescription, complies with all the original requirements, then he should be authorized to write "Re-fill prescription, No. ——," and the pharmacist should be authorized to refill it. The pharmacist, when he receives a doctor's prescription for any of these drugs must keep it upon a separate file. He may number his prescriptions in their regular order, but those containing these drugs beyond the exempted quantities, must be kept on separate files by the pharmacist. If the pharmacist does not choose to keep them on separate file, he is required to keep a record-book in which he must enter, in each instance, the name, address of the person for whom the prescription is intended, and the name of the doctor. He must use one of two ways. The most practical way, in my judgment, would be to keep two files, to number the prescription in its regular consecutive order, and to keep those containing narcotics on separate file, referring thereto by memorandum on the principal or regular file. Let me say to my friends, the druggists who are here, that if I were still in the drug business, I would find out from my neighboring doctors and dentists what their registry numbers are, as soon as possible, and then have prescription blanks made for them to contain these numbers and addresses. I make that suggestion purely from a practical point of view. Under Section 3 of the Harrison Act, every person who has registered and who buys these drugs and has them in his possession, may be called upon to make a sworn statement as to what drugs he has purchased during three months prior to the time of such demand for a statement. During three months prior to the demand for a statement, you may be asked by the collector to give an account of all such drugs you have purchased, the quantities of the same, from whom and when purchased. You may be called upon at any time by the collector of internal revenue to make a sworn statement to the foregoing effect.

These requirements are made in order to ascertain the violators or those who are likely to be violators. In other words, if the collector of internal revenue finds from the sale of official order forms that any person seems to be using an out-of-proportion number of them, you can look for him to make the demand in that connection. After the first day of March, any person who supplies the consumer with narcotics, must make an inventory of all the drugs in his possession. It must be completed and sworn to by the person, on or before the fifth day of

March, and then must be filed by that person, so that when the inspector calls upon him within two years, he may be able to produce it. My suggestion would be to file this inventory with the record-book, or with the duplicate copies of your official order forms. The inventory must include everything,—the drugs themselves, the preparations that contain the drugs in more than the quantity exempted,—and then be filed by you for inspection of the authorities at any time within the next two years.

With reference to the registry number of the physician's prescription, there is no specific form or requirement. It is only necessary that the prescription shows your registry number, name and address. My suggestion would be that the following words be used:—"Registry No. ——, under Drug Revenue Act of Congress, approved December 17, 1914." This may be just at the upper left-hand corner of the prescription. This, it seems to me, would prove in every way satisfactory.

The law also concerns itself, in Section 4, with the drugs that may be carried from one state to another. It is altogether unlawful for any one to carry or to ship narcotic drugs from one state to another, if he be not registered. There are also exceptions to this provision. An employee of a registered person acting within the scope of his employment, may carry them from one state to another, and a Common Carrier may do so. Persons who purchase the drugs upon a written prescription from a doctor, may carry them from one state to another. Persons to whom a doctor has dispensed such drugs, and has made a record of the dispensing, may carry them from one state to another, but in no other case may persons carry these drugs from one state to another.

This brings me about to the end of the Act. I have sought to prepare briefly for you and in just a few words, the important things that apply to the doctor and to the druggist. *First* of all, the doctor and druggist must register. He must secure an application blank, fill it out, swear to it and send it to the collector of internal revenue, and all this must be done before the first day of March. The blanks can be secured and filled out in the office of the Internal Revenue Collector. He must send with his first application for registry thirty-four cents cash, money order, or certified check, and an additional ten cents for ten duplicate copies of the Official order form. *Second*, the doctor should secure a record-book, which he will use exclusively for recording such of the drugs as he may dispense at his office. My suggestion would be that he paste in this book the inventory that he is required to make on March 1st, make affidavit to same, and keep. I would suggest furthermore, that he paste therein all the duplicate copies of orders that he may give when purchasing the drugs. The druggist must on March 1st make and swear to his inventory and sell only on official order form, on doctor's complete prescriptions.

I have tried to set before you the important features of this law. I would add that, to me, it seems that the burden of this Act upon the doctor, the druggist, the dentist and the veterinarian, is more imaginary than real. I would also say that, when enforced, it will not cause the trouble that may be apparent when you first study it. When new, it takes a little time to set machinery in proper motion, but when in proper motion, it is neither difficult nor burdensome. I have said that I am not prepared to defend this law in its every feature, nor the regulations that

have already been made, and I am sure there will be added some changes in these regulations. You must bear in mind that the Commissioner of Internal Revenue, more than likely, never heard of these drugs until a month or so ago. We must be reasonable with him. The law has been enacted because of the need of humanity and because of the need of this country. I ask of you to give it your kindly and whole-hearted support, even though it may seem at first to infringe upon your rights and privileges. Let us consider it an essential thing for the good of this country, Let us accept it in the proper spirit, to the honor and credit of the professions.

SOME THOUGHTS ON AN EFFECTIVE PHARMACY LAW.*

ROBERT L. MORELAND.

The object of a pharmacy law is to regulate the practice of pharmacy by protecting the public from ignorant and incompetent persons attempting to practice the art. An act usually begins by creating a Board to enforce its provisions; orders examinations to be held and fixes fees; states the qualifications required of the applicants; provides sometimes for registration of pharmacists from other states; defines drugs and poisons; provides penalties for violations, etc.

Only those who have been charged with the enforcement of such a law as is usually enacted, can realize how difficult it is to carry out its provisions,—advantage is taken of every technicality to defeat its purpose and by none more than by pharmacists themselves. On one occasion, in recent years, the Minnesota Board of Pharmacy failed to get a conviction against an unregistered druggist who sold tincture of iodine. At the trial it was deliberately sworn to by a witness that the only use he knew of for tincture of iodine was the purely technical one of *cleaning cuspidors* and that was what the Iodine was to be used for. On another occasion, after an expenditure of several hundred dollars, the board failed to convict a general store-keeper for selling Strychnine, the defense being that the employee who sold the poison was *forbidden to sell it,* although strychnine was regularly stocked and kept for sale.

Most of our pharmacy laws are very defective. A pharmacy law to be effective, should be carefully worded and should specifically state what may be done and what is forbidden, with the fewest possible exceptions and the least superfluous verbiage. It should clearly define the duties of the Board charged with its enforcement and should make the penalties for violations clear and concise and should prescribe the most effective method of legal procedure that can be defined for its enforcement. Then as to what such a law should embody. If the same principles were applied to pharmacy that are embodied in the laws regulating the practice of medicine, dentistry or veterinary medicine, it would do away with one of the greatest troubles in regulating the practice of pharmacy, viz., that none but an individual or individuals duly licensed should be allowed to own or conduct a pharmacy. I mean that unlicensed individuals, co-partners and stock companies

* Read before Thirty-first Annual Convention, Minnesota State Pharmaceutical Association, St. Paul, February 10, 1915.

have no moral right to engage in pharmacy by merely hiring one or more registered persons to conduct it for them. How long do you suppose a stock company of farmers, mechanics or pharmacists, would be allowed to practice law or open an office or offices as physicians or dentists? Why should not pharmacy be regulated along precisely the same or similar lines as the professions of law, medicine and dentistry?

It may be said in reply that there is a commercial side to pharmacy. So there is, but if the commercial side be the greater or more important, it should be divorced from the scientific or professional side, and those who wish to conduct a drug store and sell all the side lines that are now connected with the drug business, should be allowed to do so, and sell drugs, but they should not be allowed to compound any medicinal preparations or prescriptions. The qualifications for such a person should be not less than three years' practical experience and they should be required to pass a very simple examination covering the identification, nomenclature and physical properties of the various drugs and simple preparations commonly sold in a drug store. The man who can weigh out and wrap up a quantity of powdered rhubarb or gentian from a labeled bottle, the quality of which he is unable to determine, or pump from a can, glycerine, the specific gravity and purity of which he is ignorant and has no means of testing, is in no sense a pharmacist but a mere vendor of drugs.

The public has a right to expect that any person who is a licentiate of pharmacy should be competent to compound prescriptions and medicinal preparations carefully and accurately, and to manufacture pharmaceuticals conforming to official standards. This can only be obtained by raising the standard of requirements for pharmacists. For registration as a pharmacist, the applicant should have the necessary training and experience to enable him to compound prescriptions carefully and accurately, and to make all the U. S. P. and N. F. preparations that can be properly prepared on a small scale. He should be able to test and assay his chemicals and such drugs as are capable of assay, and to apply the necessary tests for the identity and purity of official substances and to conduct volumetric and gravimetric analysis.

A minimum of five years' experience should be required of every candidate before he is eligible for examination as a pharmacist, two years of which might be spent in school of pharmacy and he should have been registered as an assistant for at least two years. For an assistant pharmacist a minimum of three years' experience should be required, two of which might be spent in a school of pharmacy, and the candidate should be registered as an assistant for at least two years before he should be eligible to take the examination for pharmacist. There should also be an apprenticeship system, apprentices to be registered on passing an examination such as is now given by the Minnesota State Board of Pharmacy or else present a high school diploma, when they would be registered as an apprentice, and all experience should count from date of such registration.

The law should contain a provision that the keeping open to the public by an unregistered person of any store, shop or place for the sale of drugs, medicines or poisons, should be considered as *prima facie* evidence of a violation of the law. In this state drug stores are conducted by unregistered owners, often in the same towns with registered proprietors, the former of whom never employ registered

help and refuse to sell to strangers. They go on unmolested because the board cannot get evidence on which to begin a prosecution. This feature was embodied in the draft of the amendment to our pharmacy law passed in the last session of our legislature, but I believe it was opposed by some of the members of this association and probably for that reason was omitted from the bill.

The name of the pharmacist conducting the store should be conspicuously displayed on its front and should be on all labels. Physicians, unless they are registered pharmacists, should not be allowed to compound medicines. A physician without any pharmaceutical training, who attempts to compound a prescription, is as much a fakir as a pharmacist, who pretends to diagnose disease and prescribe therefor. Owing, however, to the enormous political power wielded by the American Medical Association and similar bodies it seems to be impossible to keep physicians strictly to their own profession.

Private hospitals, which are alarmingly on the increase and for which there is no need unless to increase the bank account of their owners and provide a safe place to get their experience, should be under the supervision of the Board of Pharmacy, the same as drug stores, and should have a pharmacist in charge. The same regulation should apply to every public hospital and their stock of drugs should be subject to the same inspection and should be kept up to the same standard as the drugs in pharmacies.

The Board of Pharmacy should be supported as at present by renewal fees. This method of supporting a State Board of Pharmacy is much better than that of receiving state aid, as, in every state, politicians try to influence examining bodies, but more particularly every state-supported body. In some states such boards are entirely political which is much to be deplored.

The difficulties encountered in framing pharmacy laws in the past, have been principally on account of the general opposition that seems to be made by legislatures to everything pertaining to pharmacy, and the want of coöperation among pharmacists. The differences of opinion and petty quarrels in their own ranks, have prevented them from presenting the proper arguments in behalf of their requirements and from maintaining a united front against the vicious legislation which is frequently attempted to be forced upon them. In this respect they are much less a power in the various states than those in many other lines of business, which is not as it should be.

I think, however, and most sincerely hope, that we have turned the corner, and that the pharmacy of the next generation will be a distinct improvement on that of the last and that physicians will expect more of and coöperate more with pharmacists and that there will be fewer nostrums manufactured and prescribed and we will get back to the days of prescribing and dispensing U. S. P. and N. F. preparations, instead of the various fanciful mixtures at exorbitant prices and the humbugs with which the market has been flooded for the past twenty-five years.

If such conditions come about, it will be necessary to have better trained pharmacists than we have to-day and pharmacy laws will have to be made more effective or become dead letters, which would mean a retrograde step of half a century in the practice of pharmacy. If ever there was a time in the history of pharmacy when the public needs protection from unscrupulous, ignorant and incom-

petent persons, it is in this age. The old simples of our fore-fathers have given away to complex preparations, active and poisonous principles, heretofore unknown and now in daily use. The pharmacist of to-day must be a pharmacist, chemist, and analyst combined.

I am aware that these few thoughts will call forth a good deal of criticism. They are deliberately written for that purpose and hostile, as well as favorable criticism, will be welcome, as it is only by criticism of proposed or accepted methods that we can ever hope to arrive at even a partially successful conclusion.

BACTERIAL *v.* VEGETABLE TOXINS.

J. STANLEY WHITE, PH. C.

In these days when the value of such products as antidiphtheria serum and antitetanus serum are recognized on all sides as being unique in their respective spheres, it is interesting to recall that it was as the result of the study of a product obtained from a purely vegetable source that these biological products assumed a practical form. The substance referred to is ricin, the tox-albuminoid principle found in castor-oil seeds, and a comparison of this and allied substances, both of vegetable and animal origin, with similar products elaborated by bacteria may not be without interest.

It is only comparatively recently that the existence of poisonous proteids or tox-albumins has been recognized. The idea that a proteid can produce dangerous or even fatal symptoms or act in any way except as a food dates only from 1884, but, according to Cushny, most of the animal poisons are now believed to be of proteid nature, and the toxins formed by micro-organisms of disease are almost certainly of the same class.

The most important toxins or toxalbumins of the vegetable kingdom are ricin, abrin, and crotin. The two latter are obtained respectively from the seeds of *Abrus precatorius* (jequirity) and *Croton Tiglium*, but they closely resemble ricin, and it will only be necessary here to refer at any length to this last-named substance.

Ricin is an intensely poisonous phytoalbuminose, which may be obtained from castor-oil seeds after the removal of the oil. It occurs only in the endosperm and embryo, where it is present to the extent of 2.8 to 3 *per cent.*, and may be obtained from fresh decorticated and strongly expressed seed by percolation with a 10 *per cent.* saline solution in which it is soluble. The percolate is filtered and saturated at 20° to 22° C. with magnesium sulphate, and the resulting white precipitate separated from the crystallized salts by dialysis. This preparation is not pure ricin, and probably contains a large proportion of albumins. As thus obtained, ricin is a white, odorless, strongly toxic, ash-yielding powder, insoluble in alcohol, ether, and chloroform.

The chemical nature of ricin appears to be analogous to that usually ascribed at the present time to the bacterial toxins and ferments, and the name toxalbumin, originally suggested by Kobert and Stillmark, who first investigated the substance,

is abandoned. Ricin differs in a marked manner from the bacterial toxins and snake venoms by its relative stability towards the natural fluids and ferments of the alimentary tract. For this reason it appears to be absorbed by the intact alimentary tract, and thus may act as a poison when administered by the mouth. The action of ricin is, however, much less powerful in the stomach than when injected hypodermically. The toxicity of the substance is enormous, and it may certainly be regarded as among the most powerful vegetable poisons when injected directly into the blood.

According to Ehrlich, 1-2000th grain per 2 lbs. body weight is fatal; 1 gm. (15.43 grains) subcutaneously is sufficient to kill one and a-half million guinea-pigs, while the lethal dose for man is supposed to be 0.30 gm. by the mouth or 0.003 gm. subcutaneously. It should, of course, be remembered that these figures do not refer to pure ricin, but to ricin contaminated with more or less albumin. Smaller doses, injected hypodermically, soon produce immunity, antiricin being formed.

As previously stated, the observation of Ehrlich of this protective reaction laid the foundation of serum therapeutics. Before discussing the production of antiricin it may be as well to briefly consider the toxins elaborated by bacteria. When pathogenic bacteria grow and multiply in the body, symptoms of poisoning (toxæmia) are manifested; consequently it was inferred that bacteria either produced poisons during their growth or contained poisons. Subsequent experiments proved that the poisonous effects of a few bacteria which passed out into the surrounding media, and the poisonous effects of the other class, seemed to be due to the actual constituents of the bacterial cells. The former are termed exotoxins or extra-cellular toxins, and the latter endotoxins or intra-cellular toxins. Some bacteria, on the other hand, notably the tubercle bacillus, elaborate both exotoxins and endotoxins. These toxins are substances of a very complex composition, probably allied to the proteins. In some instances they appear to be of the nature of enzymes or ferments, and they are direct products of the bacterial cells.

Among the few bacteria producing extra-cellular toxins or exotoxins the bacillus of diphtheria and the bacillus of tetanus are the most important. They are extremely poisonous; in fact, it has been computed that the toxin elaborated by a virulent culture of the bacillus tetanus is the most potent poison known to science to-day. These exotoxins being excreted by the bacteria, are found in solution in the liquid culture media containing the growing micro-organisms. Serum from an animal immunized by injecting into its body small and increasing doses of these soluble toxins, administered at regular intervals and given over a long period of time, is rich in antitoxin. This antitoxin, when properly prepared and standardized, constitutes the antitoxin of commerce. Diphtheria and tetanus antitoxins are prepared in this manner.

In the case of the bacteria which do not secrete a soluble toxin, the killed bacteria themselves are used for immunization. They constitute what are known as the antimicrobial serums, a familiar example of which is antistreptococcus serum, and should be distinguished from antidiphtheria and antitetanus serums, which are strictly antitoxic in nature.

Antiricin may be produced in exactly the same way as an antitoxin; in fact, an-

tiricin might be described as a vegetable antitoxin. Rabbits have been immunized by gradually increasing doses of ricin until they have obtained an immunity of 5,000, or, in other words, have developed so much antiricin in their blood serum that they are not affected by 5,000 times as much ricin as would have killed them had no preliminary treatment been instituted.

The immunity acquired for both ricin and bacterial toxins is entirely different from the tolerance acquired for morphine and other drugs. According to Cushny, the latter is due to the cells of the body becoming accustomed to being constantly bathed in a fluid containing the alkaloid. The same tolerance is acquired by various marine animals, which would be killed if suddenly changed to fresh water, but which are gradually acclimatized if the change is made more gradually by adding increasing proportions of fresh water to the sea water of the aquarium. In the case of ricin and bacterial toxins the immunity is due to formation in the body of a substance which antagonizes the original poison and constitutes what is known as an antitoxin. This antagonistic substance circulates in the blood, and can be withdrawn from the immune animal and injected into a second, which then acquires a certain degree of immunity, although less than that of the first. Just as diphtheria antitoxin and tetanus antitoxin are antagonistic only to their respective toxins, so also antiricin is antagonistic only to ricin and does not protect an animal from any other form of toxin.

Various animal poisons, such as snake venom, spider toxin, and eel serum, have been found to act in a similar manner although, apart from bacterial toxins, snake venom is the only one used for therapeutic purposes. By means of this an antitoxin has been produced which has marked prophylactic properties against snake bites, and is used extensively in countries where poisonous snakes abound. In addition to the vegetable toxins—risin, abrin, and crotin—toxins have also been obtained from poisonous mushrooms.

While antiricin has no practical therapeutic value, yet it was as the result of the study of this remarkably interesting substance that Ehrlich arrived at a practical method of standardizing the bacterial antitoxins, thus establishing a definite antitoxin unit value for these products.

It is not within the province of this article to discuss the physiological methods employed in standardization or the ingenious side-chain theory which Ehrlich evolved to explain the probable action of the antitoxins in producing immunity. Suffice to say that the discovery of ricin paved the way for some of the most wonderful products used in medicine to-day. It is only necessary to consider the tremendous number of lives which have been saved by the timely use of antidiphtheria serum, and particularly antitetanus serum in the present campaign, to fully appreciate its importance.

Pharmaceutical Journal of Great Britain, Feb. 6, 1915.

"Education is a companion which no misfortune can depress; no crime destroy; no friend alienate; no despotism enslave; at home, a friend; abroad, an introduction; in solitude, a solace; and in society, an ornament—without it, what is man?"



THOMAS F. MAIN.

PRELIMINARY ANNOUNCEMENT.

Committee on Transportation of American Pharmaceutical Association.

Your Committee takes pleasure in announcing the following very favorable excursion rates for members who propose to attend the next annual convention to be held in San Francisco, August 9 to 15 inclusive. The rates are so low as to afford an admirable opportunity of seeing at a minimum expense our great Western territory, the grandeurs of the Rocky Mountains and the beauties of the Pacific Slope, as well as visiting the Panama-Pacific Exposition, in one of the magnificent buildings of which the meeting of the Association will be held.

The railroad fares quoted are for round trip tickets, good for three months, with stop-over privileges west of Chicago.

Direct routes may be described as all running directly into California without passing through Oregon or Washington. Via Portland includes Northern Pacific R. R. (for Yellowstone National Park), Great Northern R. R. (for Glacier National Park), Canadian Pacific (for Banff, Lake Louise, Field Glacier, etc.)

Tourist sleepers are not available generally east of Chicago, but are attached to through Chicago trains leaving Boston, via Boston & Maine and Wabash route on Mondays, Wednesdays and Fridays. New York passengers via West Shore and Wabash can board these cars at Rotterdam Junction. A special tourist or Pullman sleeper can be reserved for parties of 24 and upwards.

The sleeping car rates named are for continuous service; for stop-overs enroute, an extra charge is made which is partially compensated by using the cars for sleeping purposes and thus saving hotel bills.

FARES TO SAN FRANCISCO AND RETURN.

			Sleeping cars—one-way rate			
From Boston—	Direct routes.	one way via Portland.	Pullman lower.	Pullman upper.	Tourist lower.	Tourist upper.
N. Y. C. Lines	$104.20	$121.70	$18.50	$14.80		
Boston, B. & M. via Wabash	101.20	118.70	18.50	14.80	$9.75	$7.40
New York, N. Y. C. & Pa. Lines	98.80	116.30	18.00	14.40		
Differential Lines	94.30	111.80	18.00	14.40		
West Shore & Wabash	94.30	111.80	18.00	14.40	9.25	7.40
Philadelphia	95.20	112.70	17.50	14.00		
Baltimore	92.95	110.45	17.50	14.00		
Washington	92.95	110.45	17.50	14.00		
Chicago	62.50	80.00	13.00	10.40	7.00	5.60
Cincinnati	70.25	88.40	14.50	11.60		
St. Louis	57.50	75.00	12.50	10.00		
Atlanta	72.55	95.00	14.50	11.60		
Savannah	80.50	104.50	15.00	12.00		
Jacksonville	80.50	104.50	15.00	12.00		
New Orleans	57.50	83.75	11.50	9.20		
St. Paul	63.85	74.95	13.00	10.40	6.75	5.40
Denver	45.00	62.50	9.00	7.20		

With the above settled rates for transportation, members are now in a position to make up parties from their respective cities and arrange for suitable stop-overs at points of interest en-route, suggestions as to which will appear in a later announcement.

THOMAS F. MAIN, Chairman,
166 Chambers Street, New York.

February 25, 1915.

Of General Interest

The Journal of the American Medical Association contains in its issue of February 27, an interesting article upon Hall's Antidote for Arsenic, a description of which was published in the February issue of the Journal.

The article is by Dr. Henry G. Barbour, Assistant Professor of Pharmacology at the Yale University of Medicine.

The results of his investigations are summed up in the concluding paragraph of his article as follows:

"The foregoing results indicate the apparent futility of parenteral treatment of corrosive sublimate poisoning by such a good precipitant of mercury as Hall's solution. As an adjunct to stomach washing it will quite possibly be found equal in value to tannic acid, white of eggs, or milk, etc., which are now employed."

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Frank G. Ryan, president of Parke, Davis & Co., is recovering from a painful injury to his right foot which was inflicted as he was getting off a street car in Detroit, Saturday evening, February 13. While trying to avoid stepping into a puddle of water beside the car track, as he left the rear platform of the car, Mr. Ryan slipped and fell, with the weight of his body upon his foot. He was taken to Harper's Hospital in Detroit, where it was said that he had broken the bones in his foot in two places. He is now resting comfortably, but it is feared that it will be some time before he has recovered entirely from the fracture.

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DRUGGIST'S SUPPLY CORPORATION.

The first convention of this body was held on Monday, February 15, continuing through the week.

This organization, composed of forty-seven wholesale drug houses, made a display of the output of manufacturers of druggists' sundries at its show-room at 181 William street, which was of much interest.

The officers of the corporation are:—President, Dr. William Jay Schieffelin; First Vice-President, Charles Gibson; Second Vice-President, Clayton French; Treasurer, William P. Ritchey; Secretary, Francis E. Holliday; General Manager, William L. Martin. The Executive Committee consists of Messrs. Gibson, Ritchey, Holliday, Albert Plaut, and Dr. Schieffelin.

At the luncheon on Friday, interesting addresses on the activities and purposes of the syndicate were made by the president, Dr. William Jay Schieffelin, of Schieffelin & Co., New York City; L. R. Kauffman, of the Kauffman-Lattimer Co., Columbus, Ohio; S. A. Foot, of Lehn & Fink, New York; E. T. Faxon, of the Faxon & Gallagher Drug Co., Kansas City, Mo.; W. T. Carver, of Farrand, Williams and Clark, Detroit, Mich.; Francis E. Holliday, general representative of the National Wholesale Druggists' Association and William L. Martin, general manager of the syndicate.

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Prof. C. H. La Wall, a member of the faculty of the Philadelphia College of Pharmacy and chemist for the Pennsylvania Dairy and Food Commission, while exercising in the Philadelphia Gymnasium about two weeks ago, broke a tendon in his left leg, which accident has caused him to confine himself to the house for some time.

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EARLY CLOSING IN AUSTRALIA.

According to the Australia Journal of Pharmacy, early closing in that Dominion is accomplished by governmental regulation, upon the petition of the majority of the shop-keepers, under a recently passed amendment to the Factories and Shops Act. The first regulation in regard to this matter was issued on the sixth day of January last, and is as follows:

"*The Executive Council Chamber Melbourne.*

"Under the powers conferred by the Factories and Shops Acts, His Excellency the Governor of the State of Victoria, by and with the advice of the Executive Council thereof, upon a petition certified by the acting municipal clerk of the municipal district of the Shire of Mildura, as signed by a majority of all shop-keepers (exclusive of hawkers and pedlers) of the particular class or kind to be affected, doth hereby make the following regulation, that is to say:

"All Chemists' shops (being shops of a class or kind mentioned in the Fourth *Schedule to the Factories and Shops Act*

1912, No. 2386) in the township of Mildura within the municipal district of the Shire of Mildura, shall be closed in each and every week during the whole of each year on the evenings of Sunday, Monday, Tuesday, Wednesday and Thursday from the hour of eight o'clock, on the evening of Friday from the hour of ten o'clock, and on the afternoon of Saturday from the hour of one o'clock, and allowing such shops to re-open on the evening of Saturday in each and every week from the hour of seven o'clock until the hour of eight o'clock.

"And the Honorable Sir Alexander James Peacock, His Majesty's Minister of Labour for the State of Victoria, shall give the necessary directions herein accordingly."

F. W. Mabbott,
Clerk of the Executive Council.

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THE EIGHTH ANNUAL MEETING OF THE AMERICAN DRUGGISTS' FIRE INSURANCE COMPANY.

At the eighth annual meeting of The A. D. F. I. Co., held at Cincinnati, February 9-10, the following directors were elected:

Chas. H. Avery, Chicago, Ill., L. G. Heinritz, Holyoke, Mass., James H. Beal, Urbana, Ill., W. S. Elkins, Jr., Atlanta, Ga., Wm. C. Anderson, Brooklyn, N. Y., G. O. Young, Buckhannon, W. Va., A. O. Zwick, Cincinnati, O., Lewis C. Hopp, Cleveland, O., Simon N. Jones, Louisville, Ky., John D. Muir, Grand Rapids, Mich., Walter Rothwell, Hatboro, Pa., Geo. B. Kauffman, Columbus, O., M. S. Kahn, Baltimore, Md., E. B. Heimstreet, Palmyra, Wis., and Frank H. Freericks, Cincinnati, O.

The Board of Directors elected the following officers:

Chas. H. Avery, President; L. G. Heinritz, Vice-President; Frank H. Freericks, Secretary and General Counsel; Geo. B. Kauffman, Treasurer; Executive Committee: Chas. H. Avery, L. G. Heinritz, Walter Rothwell, A. O. Zwick, J. H. Beal, Geo. B. Kauffman and Frank H. Freericks.

The year 1914 was the most successful one in the history of the Company. During the year it wrote $14,785,282 of insurance at a premium of $150,827.66. The gross savings in premiums made and retained by its policyholders during the year on the business written amounted to $50,275.88. The gross savings in premiums which the Company has made for its policyholders since it commenced business amount to $213,035.64. During the year the company had 160 fire losses amounting to a total of $41,120.64. The total expenses for the year, inclusive of adjustment expense, amounted to $48,649.90. The Re-Insurance Reserve or Unearned Premiums of the Company on the business of the year amount to $65,568.50.

The Board of Directors declared a 9% dividend, payable on March 1, 1915.

On January 1, 1915, the total assets of the Company were $385,350.99, of which $343,564.30 was represented by Government, County and Municipal bonds.

The total liabilities of the Company, not including Re-Insurance Reserve, were $9,528.75. After deducting the Re-Insurance Reserve of $65,568.50, and the value of furniture of $716.40, the net surplus of the company as to its policyholders amounts to $309,537.34.

The Board of Directors ordered that the Company, which is now doing business in 31 states, should during the year enter four or five additional states. It gave serious consideration to a possible further reduction in premium rate to the policyholders, and ordered a complete survey of the Company's business with a view of taking action at the next Annual Meeting. The Company, which now has entered the ninth year of its career, looks forward to a most substantial increase in its business for the year and feels reasonably certain that in its tenth year the annual business of the Company will be in excess of $20,000,000, at a premium in excess of $200,000. A saving to its policyholders in one year of over $50,000 in their premium outlays proves the splendid service rendered to the drug trade of the country by those who organized and capitalized The American Druggists' Fire Insurance Company.

NECROLOGY.

THOMAS KNOEBEL.

Thomas Knoebel, of East St. Louis, Ill. was born at Belleville, Ill. on August 30, 1859 and died at his home in East St. Louis on January 3, 1915.

Mr. Knoebel received his early education in the public schools of his native city, graduating from the high school in 1876. He then accepted a position with Adolph Finke, of East St. Louis, and entered the St. Louis College of Pharmacy, from which he was graduated in 1880. In 1881, he

bought the store of his employer and later moved his place of business to 209 Collinsville avenue, East St. Louis, where he remained until his demise.

He became a member of the American Pharmaceutical Association in 1892 and took a deep interest in its work. He was one time president of the Illinois Pharmaceutical Association and an earnest worker in the promotion of state pharmaceutical legislation in Illinois. He was particularly active in matters of public education, being president of the local Board of Education. He took a deep interest in the education of the poor and lowly, and through his efforts a consolidation of the various school districts of his city was effected, so that all classes, poor and rich alike, were given the equal educational advantages. He was prominent in civic life, being selected at one time as a candidate for the mayoralty of his city.

Aside from his public and business life, there was another phase of his character that endeared him to all who knew him—his kindness to the poor; and his advice to those in distress, and his even temperament, were the complement of the life of his inner home, that was a model in its best and truest sense.

On March 29, 1883, he was married to Miss Minnie D. Eslaman, who with his son, Percy T. survives him.

As expressed by his intimate friend, Hon. W. J. Perrin, "He belonged to no particular organization and was of no particular creed, but better than all he had the highest religion—that of humanity. The highest hope—that of ultimate perfection. His creed was optimism and his rule was patience and perseverance. As one who knew him for forty years I render every tribute willingly, but I know of no tribute higher or loftier than to say that he was in every sense faithful to his trust."

J. W. E.

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Joseph Alexander Velsor, President of the firm of Peek and Velsor, New York City died on February 15 at his home 105 McDonough St., Brooklyn, of oedema of the lungs, at the age of eighty-five years.

Mr. Velsor was a cousin of the celebrated poet Walt Whitman. Funeral services were held at his residence, on Wednesday, February 17.

Mr. Velsor was a member of the A. Ph. A. and of the National Wholesale Druggist's Association and held membership in several social clubs of Brooklyn and New York.

He was also a life-member of the Y. M. C. A. of Brooklyn and a Free Mason. He leaves behind him to mourn his loss, a wife and two children, Joseph H. Velsor and Mrs. Frederick Smith.

Letters to the Editor

Editor The Journal of the American Pharmaceutical Association, Columbus, Ohio.

February, 24, 1915.

Dear Sir: It may be of interest to you to know that the Executive Committee of the National Association of Boards of Pharmacy will meet at Washington, D. C., (Hotel Raleigh), March 16-20.

Now, as Bert Taylor of the Chicago Tribune might say, notice of "Committee Meetings" is "Zero," in news. However, I believe the coming meeting has more than the usual significance. Big things are growing out of the work being carried on by the National Association of Boards of Pharmacy. Especially the work covered by the Advisory Examination Committee of the Association. Not the least of these is the tendency for the Schools and Boards to "get together" on the scope and character of courses of studies and examinations.

A joint session of the Boards and the Conference of Pharmaceutical Faculties has been listed on the programs of the respective conventions, each year. It has usually been a "tailender," wholly informal in character, without any definite object or program, and as is usual in such cases, without much result.

Now it is proposed to change all this. At the Detroit Convention last year, committees were appointed by both the Conference of Pharmaceutical Faculties and the Boards. These committees to work jointly and to arrange a definite and vigorous program in order that Boards and Colleges might derive maximum benefits from the meeting. Representatives of these committees will meet jointly with the Executive Committee of the N. A. B. P. at its Washington meeting to arrange for definite work to be taken up by the joint meeting of the Conference of Pharmaceutical Faculties and Boards, to be held during the coming convention at San Francisco, in August. It is proposed to make this meeting something more than a

"tailender." The real "Meat in the Nut" and object of this proposed work is the bringing about a closer relationship between Colleges of Pharmacy and Boards of Pharmacy. Especially with a view of finding out and correcting if possible, the seeming lack in many instances, of proper balance between what is taught and examined on, in the schools; and the scope covered by Boards of Pharmacy examinations.

The Conference of Pharmaceutical Faculties' Committees will be represented at the Washington Conference by Professors, Julius A. Koch of the Pittsburgh College of Pharmacy; Henry Kraemer of the Philadelphia College of Pharmacy; and Henry P. Hynson of the Department of Pharmacy, University of Maryland.

Those representing the Committees for the National Association of Boards of Pharmacy will be Mr. Wm. S. Flint of Massachusetts; W. P. Porterfield of North Dakota; and H. C. Christensen of Illinois.

The members of the Executive Committee of the N. A. B. P. are as follows: L. C. Burton, Chairman, Stroud, Oklahoma; L. C. Lewis, Tuskegee, Alabama; W. P. Porterfield, Fargo, North Dakota; T. A. Miller, (Pres. N. A. B. P.) Richmond, Virginia, Ex-Officio; H. C. Christensen (Secy. N. A. B. P.) Chicago, Illinois, Ex-Officio.

A number of other Association members and educators are expected to be present.

There is at present, a great deal of interest in this movement for closer association between Boards of Pharmacy members and School Faculties. Both bodies are looking forward to this as the next big advance in Pharmaceutical Education and Examination Methods.

Inasmuch as all of us—outside of the immediate officers, depend upon the Journals of Pharmacy for information marking the progress of our profession, any space you can spare to announce these meetings, the objects sought and progress being made, will, I am sure, be greatly appreciated, not only by the officers and members of the respective Associations but also by the profession in general.

Thanking you in advance, I am,

Very truly yours,

H. C. CHRISTENSEN,
Secretary N. A. B. P.

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Editor The Journal of the American Pharmaceutical Association, Columbus, Ohio.

February 24, 1915.

Dear Sir: As Secretary of the National Association of Boards of Pharmacy, I have recently received a number of communications from Boards of Pharmacy members, and others, in different states with reference to the advisability of introducing "bills," in state legislatures fashioned along the lines of the "Harrison Act."

There seems to be an impression in a number of instances, that in order to have this law effective in a state, the state must have a law to correspond.

I am attaching hereto a copy of a letter which I have used—with some slight variations, in making reply to these communications. You are at liberty to use it as you may see fit—as an open letter from me as Secretary of the N. A. B. P., quote from, or as a basis for an article with reference to this matter, or not at all.

It would however seem, since I am receiving enquiries, that it might be of advantage to publish some information along this line.

I am, Very truly yours.

H. C. CHRISTENSEN,
Secretary N. A. B. P.

COPY OF LETTER.

February 15, 1915.

Referring to your letter of recent date relative to the advisability of introducing into your legislature, which is now in session, a bill fashioned along the lines of the recently passed Harrison Narcotic Law," I beg to submit to you certain facts and opinions which will, I believe, on consideration, point out the inadvisability of introducing such a bill.

First: In theory, the Harrison Narcotic Law, if I understand it, aims to restrict and control the distribution of certain "habit forming" drugs, in order that they may not be illegitimately used. The enforcement of this law is placed in the hands of the Internal Revenue Department of the Federal Government, which certainly has all the "machinery" for enforcing the law and certainly has the reputation of enforcing the law without fear, favor or relaxation.

Second: This law differs, markedly in its application, from the "Pure Food and Drugs Act," which extended only to Imports and Interstate shipments. The Harrison Narcotic Law extends to every state, city, village, town, cross-roads store, rural route, etc., within the United States and its possessions. The pure food and drugs act, does not apply to the manufacture and sale of food and drug products within the state, and hence the states were left to enact and enforce laws for the control of their "internal" affairs. The Harrison Law, however reaches within the state and applies to all venders in certain drugs, regardless of state, city, village or county lines.

Third: Now, a state law along the lines of the Harrison law would mean paralleling the work all along. It would mean, inspectors, expenses, taxes, etc., for state work already being done by the Federal Government.

Fourth: It would also mean the keeping of double sets of records by druggists—those for the Federal Government and those for the state, with endless confusion and annoyances.

Fifth: When, again, in the matter of punishing infraction of the law, the violator would be doubly liable—to the state and to the Federal Government, and inasmuch as the Federal Authorities would be the most

likely to prosecute first, I doubt very much if one would—especially in the case of a jury trial, get a second conviction on the part of the state. Your law would therefore, in effect, become a dead letter.

As a pharmacist, I am opposed to legislation of any kind that will harass the members of a profession, already burdened with laws and regulations, when said legislation serves no good purpose either for the pharmacist, or the public he serves.

As a board member, for several years, I am convinced that it is the duty of Boards of Pharmacy, to be as alert in protecting the interests of the pharmacists of their respective states, as they would be in protecting the great mass of people of the state in which they serve. I am opposed to the enactment of laws of any kind that become dead-letters on our statute books, either because they are unnecessary, or because they lack the support of public opinion, which is essential to the enforcement of any law.

A state law could, to be sure, be made more stringent than the Federal law, but that would be of doubtful advantage. I believe the Harrison Narcotic Law, properly enforced will control thoroughly and efficiently the distribution of habit forming drugs, and if that is done, the end sought is attained.

I hope the Boards of Pharmacy and others interested in pharmacy legislation in the different states will realize the seriousness of a duplication of this law and lend every effort to prevent such mistakes being made.

Very truly yours,
H. C. CHRISTENSEN,
Secretary N. A. B. P.

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Chicago, Feb. 21, 1915.

My Dear Sir: I used to wonder why Dr. Whelpley always remarked "thank you" when I sent in my five. I now know. It is my turn now to thank you for the contents of the February issue. Just what a druggist likes to read.

Very truly yours,
JOHN STUCHLIK.

3859 W. 26th St., Cor. Springfield Ave., Chicago, Ill.

College and Society

ILLINOIS PHARMACEUTICAL ASSOCIATION.

Owing to some questions that arose regarding the hotel facilities, the Centralia Commercial Club has withdrawn the invitation extended to the Illinois Pharmaceutical Association to hold its next convention in Centralia. The vote of the Executive Committee of the Illinois Pharmaceutical Association is now announced. The selection of Centralia as the place of meeting has been reconsidered and by a large majority the Executive Committee has selected Springfield. The annual convention, therefore, will be held at Springfield, June 15 to 17, 1915.

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UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

The classes of the University of Illinois School of Pharmacy have organized and elected officers as follows:

Senior class—President, H. L. Eberly; Vice-President, S. B. Trippett; Secretary, L. A. Gorham; Treasurer, Ralph Hawthorne; Sergeant-at-Arms, H. A. Nelson.

Junior class—President, Ed. Baldwin; Vice-President, Frank Graham; Secretary, D. B. Real; Treasurer, Tom Copeland; Sergeant-at-Arms, Ernest Denson; Historian, Warde Imes.

The Phi, Chi and Alumni Chapters of the Kappa Psi Fraternity gave a dance at the new Fort Dearborn Hotel, Chicago, February 5, 1915. The affair was very much enjoyed by a large number of fraternity members and their ladies including many of the Alumni.

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THE COLLEGE OF PHARMACY OF THE STATE UNIVERSITY OF IOWA.

Prof. R. A. Kuever addressed the Iowa Association of Ice Cream and Butter Makers on the subject of Vanilla at their recent convention at Des Moines. He delivered a similar address before the Nebraska Association at Omaha, Nebraska.

Dean Teeters, chairman of the Athletic Board represented Iowa University at the annual meeting of the governing board of the Iowa state conference of inter-collegiate athletics which was held in Des Moines, January 29.

Professor Jagadis Chander Bose of the University of Calcutta, India, one of the most distinguished plant-physiologists of the world, accepted the invitation of the

University to give an address on his discoveries before the students and faculty on February 9.

Professor Bose has lectured before the Royal Institute of London, at the Universities of Oxford and Cambridge, of Paris, Berlin, and Vienna.

The English Government has conferred upon Dr. Bose the decoration of the Companionships of the Star of India and the Indian Empire and sent him on a scientific mission to Europe just a few months before the outbreak of war.

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COLLEGE OF JERSEY CITY.

ENTERTAINMENT AND BALL OF THE JUNIOR FRATERNITY.

The Junior Class of the Department of Pharmacy of the College of Jersey City, this year is not only large in number, but also great in activity. They have even formed a new fraternity, having the mystic letters P. I. D., which means

"PROSPICE IUVENTUS DILIGENTIA"

"LOOK FORWARD O YOUTH WITH DILIGENCE."

The Annual Entertainment and Ball of the Junior Class was held on Friday evening, February 12th (Lincoln's birthday) at Majestic Hall, 125 E. 125th street, New York City. The entertainment was well arranged and included besides many other attractions a one-act play and also an American Indian Tableau.

The ball included the latest dances and over two hundred couples took part in the march, which was led by the Dean, Dr. Joseph Koppel. The following other members of the faculty were also present: Prof. Otto Raubenheimer, Prof. Jacob Gutman, Prof. Joseph Koffler, Prof. Adolph Schnitter, Prof. Felix von Oefele, Dr. Victor E. Levine, Dr. Enrico Samarelli, and Dr. Alfred B. Guarnier.

The Senior Class as well as the Post-Graduate Class were well represented, and quite a number of students from other colleges were in attendance. Short speeches were delivered by Prof. Joseph Koppel, of the Faculty, Charles M. De Gaetani, President of the Junior Class, Louis Schultz, Vice-President of the Senior Class, and Edward Sher, President of the Post-Graduate Class.

The music was excellent and was furnished by the orchestra of Prof. Vincent Norman Riggio. The officers of the Junior Class and quite especially Charles M. De Gaetani, President, J. Kaplin, Vice-President, Miss J. Schillaci, Secretary, D. Rosenfeld, Treasurer and H. J. Ellen, Sergeant-at-Arms, deserve credit for their active work.

This entertainment and ball given by the Junior Class was a great success, and proves that the College of Pharmacy of Jersey City is not only making headway along educational lines, but also socially. It is expected that another entertainment including a banquet will be given during May, before graduation.

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MINNESOTA STATE PHARMACEUTICAL ASSOCIATION.

The thirty-first annual meeting of this association was held on February 9-10-11, at St. Paul. About seven hundred people attended the convention and the meeting was a very successful and enjoyable one.

President Max E. Menzel presided at the opening session on Tuesday morning and the gathering was welcomed to the city by Commissioner Henry McCall. Professor F. J. Wulling responded to the welcoming address, and the meeting was then addressed by Governor Hammond, whose complete address will be found in another column.

Mr. Donald Robertson made fitting response to the Governor and then President Menzel delivered his address.

He referred to the effects upon the trade of the European War and to the war tax laid by the government to supply the deficiency in the customs revenue; endorsed the Stevens bill; and gave qualified approval to the Harrison Anti-Narcotic legislation.

He referred to the evils of dispensing by physicians, to substitution by druggists, and suggested the adoption of a legal prescription blank to eliminate the reasons urged by physicians for dispensing their own medicines.

He criticized counter-prescribing and suggested remedial measures for raising the standard of pharmacy.

He condemned the extensive advertising in a fraudulent and misleading manner of proprietary medicines and suggested that the

journals of the trade should be critical of the advertising they accept.

He suggested an appropriation by the Association of $25 for the relief of the Belgian pharmacists.

He praised the work of the Secretary, Dr. E. L. Newcomb, and thanked the other officers of the Association for their support.

The Treasurer's report showed a very satisfactory financial exhibit for the Association.

Secretary E. L. Newcomb made a business-like report of the duties and activities of his office. He reported the membership of the Association as 669.

The Scientific papers presented to the Scientific Section comprised the following: "The Twelve Schuessler Tissue Remedies," by Dr. Wulling; "Some Ash Determinations of Digitalis," by Mr. Haynes and Dr. Newcomb; "Drug Adulteration," by Prof. Gustav Bachman; and Dr. Newcomb presented three papers entitled "Microscopic Characteristics of some Powdered Unofficial Drugs," "Drugs produced in the Medicinal Plant Garden of the M. C. P. during 1914," and "Ash Contents of some Unofficial Drugs."

Mr. F. A. Upsher Smith read a paper upon "Compound Syrup of Hypophosphites," which paper was accompanied by samples made by suggested new formulas.

Mr. E. V. Clark gave a lecture illustrated by stereopticon views on "Hog Cholera Serum."

The following officers were elected for the ensuing year:

President, Richard J. Messing; First Vice-President, John Danek; Second Vice President, Miss Marie Piesinger; Third Vice-President, Donald Robertson; Secretary, Dr. E. L. Newcomb; Treasurer, L. J. Aberwald.

The meeting was addressed by Internal Revenue Collector Lynch and by Secretary Potts of the N. A. R. D. both of whom spoke upon the recent National legislation treating at length upon the Harrison Bill, by C. H. Turner, on "Drug Store Accounts" and by Mr. Hilbert on "The Soda Fountain."

The entertainments were the reception and ball, excursions and theatre-party for the ladies and the annual banquet which was attended by about five hundred people.

Proceedings of the Local Branches

BALTIMORE.

The February meeting of the Baltimore Branch of the American Pharmaceutical Association was held Wednesday evening, February the seventeenth, in the Hynson, Westcott and Company assembly room at Charles and Franklin Streets, with President E. W. Hodson in the Chair.

The minutes of the January meeting were read and approved.

As an outcome of their reading, it was ascertained that the Internal Revenue Department considers it advisable for physicians to not have their registry number printed on their prescription blanks but to write it each time, for if numbered blanks fall into the possession of unscrupulous persons they might, by using them, obtain supplies of narcotics until the fraud was discovered.

A copy of a proposed letter to the Press in regard to the Harrison act was submitted by the Secretary and was referred to the executive committee for final action.

An election of three chairmen of standing committees, postponed from the previous meeting, was held and resulted as follows:

Chairman of Committee on Membership, Charles Morgan.
Chairman of Committee on Professional Relations, John B. Thomas.
Chairman of Committee on Education and Legislation, Louis Schulze.

The regular program for the evening was: "The Preservation of Galenicals" by Dr. Charles C. Neal, who has given a great deal of attention to this somewhat neglected but important part of the "Day's Work," and "Helpful Hints in Dispensing and Manufacturing" by Charles C. Meyer and Otto Muelhause, practical dispensing pharmacists, both of whom have given and are giving considerable time and much talent to developing, improving and perfecting new dispensing methods.

Mr. Neal, in reading his paper, considered particularly tinctures, fluid extracts, solid extracts and powdered extracts and during its reading and discussion, the following facts and lessons were learned.

Any deterioration, in about one-third of

the pharmacopœia preparations, is due to carelessness in preservation or storage.

A preliminary sedimentation, rather than precipitation, begins in the majority of tinctures and fluid extracts in from a few hours to several weeks after they have been made. After this usually inert sediment has ceased falling and has been, as it usually is, filtered out, the finished preparation should be practically stable, if kept in proper containers, securely stoppered, and at a uniformly moderate temperature and protected from light and heat.

Preparations high in alcohol, as a rule, keep much better than those of low proof and aqueous or weakly alcoholic ones are much more prone to deterioration.

Containers should also be practically full. A pint of fluid extract or tincture in a gallon bottle is exposed to the action of the seven and a half pints of air in the bottle and oxidation is likely to go on and even evaporation of volatile constituents may occur, resulting in the loss of valuable components and a lowering of alcoholic strength.

Loose stoppers are responsible for the same conditions and the practice of recorking a bottle with a stopper which has been pierced by a cork screw or of loosely corking it with a good cork always causes loss of something or a change of some kind, if the preparation is kept for any length of time.

Evaporation of a fluid extract to a solid extract or to even a hard dry extract has occurred as a result of this carelessness. Just the opposite effect is produced in deliquescent salts and a liquid may result.

Powdered extracts should not be poured out of their containers but should be removed with a spatula. Any of the powder left on the inside of the neck and in contact with the cork, will invariably become a solid extract, especially in damp climates, the cork sticks and is generally broken in attempting to remove it.

Solid extracts should be taken from the center of the jar and any to be replaced should be dropped in the same place and not wiped from the spatula on the side as hardening of that left there, follows.

"No sane man or official will hold a pharmacist for an allowable deterioration in the strength of Spirit of Nitrous Ether, Tincture of Iodine, Fowler's Solution, or similar preparations" was the answer of a state official to a query, but it was pointed out that care must be exercised in making everything especially in making Spirit of Nitrous Ether in small quantities and storing it in small amber bottles.

It was also brought out, that, in these and similar cases, the new Pharmacopœia proposed to allow for a slight deficiency or increase in strength.

The general use of tap water by some pharmacists was condemned and its replacement in all preparations by distilled water was advocated.

Solution of magnesium citrate made with recently distilled water or with boiled and cooled stock distilled water has kept for months and need not be freshly prepared. A case was cited, an account of which appears in the 1911 Proceedings, of a bottle of this solution which showed no signs of decomposition, excepting darkening, after fifteen years.

Mr. Meyer suggested a unique way in which to prepare this solution.

Drop the oil of lemon calculated from the required quantity of syrup of citric acid, on the magnesium carbonate—(which must be of U. S. P. quality and not the kind marked for "Technical use only")—place this into all of the distilled water necessary for the finished product, stir well, place the citric acid crystals in a muslin bag and suspend just below the surface of the liquid. Solution will take place rapidly and when completed, add sugar, calculated from the required quantity of syrup of citric acid. Filter, bottle, charge, cap with a crown cork and label. He has kept it for eight months and it may keep longer as he feels that if it keeps that long it should keep practically indefinitely.

Stock solutions of the salts of the halogens or of the alkaloids can be kept for a long time or until used and show no signs of fungus growth if made with boiled and cooled distilled water.

Mr. Meyer brought along a wonderful assortment of apparatus, most of which is in regular use about his pharmacy.

His explanations of the uses to which they were put and his exposition of his subject was instructive, edifying and entertaining.

Among the various and sundry objects in his exhibit were:

A percolator ring with three movable pins which could be adjusted by thumb screws to

take anything from a small funnel to a large percolator.

An absorbent cotton holder made from a slide covered wood box with a hole in the bottom out of which the cotton protruded. This was kept in an elevated position and small tufts could be pulled away and used for filtering, *et cetera,* while the rest of the cotton was kept clean and protected from dust.

A box arranged similarly but with a slit in the bottom out of which the end of a roll of bandage gauze protruded. Any length desired for straining or other purposes could be pulled out and cut off with scissors.

A spring holder for rubber stamps for holding graduates bottom up and allowing them to drain without the top coming in contact with a dusty shelf.

An egg beater for quickly making emulsions.

A small sauer kraut cutter for shaping up small pieces of castile soap, utilizing the shavings for soap liniment.

A small tin machine oil can for filling capsules with oil.

A hand power capping machine for capping magnesium citrate solution bottles with crown caps, costing six dollars.

An irrigating apparatus can with tube attached was used for filling liquids into bottles.

Numbers of other ingenious things were shown and Mr. Meyer was looked upon as a near wizard.

Mr. Muelhause contributed a paper on different prescriptions and brought out that cocaine hydrochloride was incompatible with borax in solutions that contained no glycerin. Spray solutions of some of the proprietary mild alkaline antiseptic liquids which formerly formed precipitates when cocaine hydrochloride was added, do not form them now. This bears out what has long been contended, that the manufacturers of this class of medicines are likely to change their formulas from time to time and the dispensing pharmacist may get different reactions as a result.

The subject of the salting out of small quantities of essential oils in solutions of bromides or other salts in aromatic waters was brought out by a prescription which contained 8 minims of spirit of anise in a two ounce chloroform water solution of strontium bromide and resorcinol.

No method of mixing this was devised which produced a clear solution, except to add alcohol or additional water.

Replacing a part of the aromatic water in such solutions, sometimes by even a small quantity of distilled water and in others by a larger quantity, produced clear solutions.

A prescription calling for ammonium carbonate, syrup of iron iodide and mucilage of acacia caused all sorts of trouble. The best procedure under the circumstances seemed to be to use tragacanth and dissolve the carbonate in half the required quantity of water and mix the syrup with the other half, mix these two solutions and in the mixture dissolve the tragacanth.

In all cases of a precipitate occurring when two soluble substances produce it, the rule to follow is as above and to dilute the solutions of each as much as the formula will permit and then mix them.

In considering the swelling up of mass capsule prescriptions of Antikamnia and citrate caffeine and the prevention of it by using an equivalent amount of caffeine alkaloid, it was brought out that the tablets of Antikamnia and Codeine, which, heretofore, contained 18 grains codeine sulphate to the ounce, now contain only 1/8 grain to the ounce.

WM J. LOWRY, JR., Secretary.

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CHICAGO.

The Chicago Branch of the American Pharmaceutical Association met February 16th. The topic of the evening being "The Pharmacy Preparatory High School Course."

This course has been arranged by Mr. W. M. Roberts, District Superintendent of schools of Chicago, a committee of the Executive Board of the Chicago Retail Druggists Association consisting of Messrs. Louis J. Pelikan, E. P. Seibert and A. C. Caldwell, Dean C. W. Patterson of Northwestern University School of Pharmacy, Dean W. B. Day of the University of Illinois, and three Chicago high school principals.

The pharmacy preparatory course has been officially adopted by the Board of Education upon the recommendation of Ella Flagg Young and is now being offered at the Chicago high schools to young men and women who have completed an elementary course equivalent to that of the

Chicago elementary schools and who desire to enter the profession of pharmacy. The course presents the following unusual features: First, students will be in attendance at school only in the morning, 8:30 to 12:30 P. M. i. e. for four study periods; second, the studies will include, in addition to English, Latin and algebra, others especially preparatory to the college of pharmacy courses, such as botany, chemistry, physics, physiology and simple accounting; third, one credit will be given each year for *one whole year* of properly supervised and tested work as an apprentice in pharmacy. The completion of the work in school will yield twelve credits and the four credits of apprentice work will provide sixteen credits, one credit short of the number required for graduation. One additional study period per day in any one of the four years would furnish this missing credit and qualify for graduation from the high school.

The two schools of pharmacy in Chicago have raised their requirements for admission to fifteen units, the Northwestern University School of Pharmacy now requiring fifteen units and the University of Illinois School of Pharmacy will require the same in 1916.

Students preparing for pharmacy who may be fortunately situated as to be able to attend school for five or six class periods each day may earn in the school the full seventeen credits required for graduation or at least the fifteen required for admission to the schools of pharmacy. It is estimated that about 500 boys now employed in drug stores in Chicago may avail themselves of this course if the druggists will give their apprentices a chance. The plan has already been favorably received by many pharmacists of the city.

One very important feature of the course is the standardization and supervision of the apprentice work. At present an apprenticeship committee has been appointed by the Chicago Retail Druggists Association to which is added a member of the Board of Education which shall supervise the apprentice work. An amendment to the Illinois Pharmacy law requiring graduation from a recognized school or college of pharmacy as a prerequisite to the examinations for registered pharmacy is to be presented to the state legislature now in session and its passage will be urged by the Illinois Pharmaceutical Association, the Illinois Board of Pharmacy and other influential organizations of pharmacists.

In the discussion of the evening Messrs. Roberts, I. M. Light, W. B. Day, C. W. Patterson, J. H. Wells, Thos. Potts, L. J. Mrazek, L. J. Pelikan, Hugh Craig, Wm. Gray, E. N. Gathercoal and others participated. Mr. Light stated that in his opinion most of the Chicago druggists were in favor of the pre-requisite requirement yet the graduation from high school requirement for entrance to schools of pharmacy was frightening many druggists for fear that there would soon be a scarcity of clerks.

E. N. Gathercoal, Secretary.

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DETROIT.

The third meeting of the Branch was held at the Wayne County Medical Building on February 19th.

Mr. Seltzer, in a report for the Committee on Legislation stated that some amendments to the present Michigan Pharmacy Law had been drawn up by the Committee, aided by Mr. Woodruff, and some of these would be presented to the Legislature at its present sitting. Modifications of the narcotic law were especially desirable, and are to be submitted for action.

Prof. W. H. Allen then called attention to the confusion existing with regard to a reliable antidote to mercuric chloride poisoning, and presented the following resolution as a motion, which was seconded by Mr. Mann, and then adopted by vote:

"In view of the fact that poisoning by mercuric chloride has increased, and the antidotes at present published do not appear to be always reliable, it is desirable that an investigation be made by the American Pharmaceutical Association to decide upon better antidotes and to publish the same so that pharmacists may have such instructions to render "first aids," pending the arrival of a physician."

Mr. Allen also exhibited a sponge, originally weighing 4 ounces, and the "mud" weighing 2½ ounces which he had washed therefrom, and which had undoubtedly been present as a filler, the sponge having been sold by weight. He objected to the reflection on the retail druggist which such conditions bring. The subject was discussed briefly by Messrs. Rohnert, Mann, and others who tended to the view that the selling of sponges is no longer an attractive

issue for pharmacists, many of whom are now discouraging it.

Mr. W. L. Scoville then presented "Three Interesting Incompatibilities" with illustrations, the first being the change of quinine to quinotoxin through the influence of organic acids, and pointing out an important incompatibility between quinine and aspirin. The second incompatibility is the decomposition of organic acids by ferric salts, induced by light, the acids being reduced to water and carbon dioxide and causing an effervescence which may burst a bottle. The third, was a combination of boric and tartaric acids in tablets which proved to be sufficiently active chemically to liberate hydrochloric acid from ammonium chloride.

Mr. C. F. Mann gave an informal talk, full of sound sense, upon the "Relationship between Clerk and Employer," pointing out the needs for mutual confidence, mutual forbearance and reasonable expectations on each side. Mr. Mann called attention to a number of details in carrying out such a policy. Mr. Weaver discussed the subject briefly, stating that he believed that both clerk and employer profited by great expectations on each side rather than by expecting little.

The Chairman announced that the next meeting of the Branch on March 19 would be addressed by Professor Edmonds of the University of Michigan on the subject of "Twilight Sleep."

WILBUR L. SCOVILLE, Secretary.

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NASHVILLE.

On January 20th the Nashville Branch A. Ph. A. met in Bloomstein's Hall with the new President, E. F. Trollinger, in the chair. On account of the illness of Secretary White, Dr. J. O. Burge was appointed Secretary *pro tem.* After the approval of the minutes President Trollinger appointed the following committees for the ensuing year: Legislation—C. C. Young, Chairman, J. B. Sand, W. R. White, S. C. Davis. Membership—M. E. Hutton, E. A. Ruddiman, J. O. Burge, L. S. Pully, D. J. Kuhn, A. J. Martin, J. Y. Waldrum Publicity—W. R. White, J. O. Burge, J. R. McDaniels. Abstracts—R. L. Eves, F. L. Smith, Max Bloomstein, J. G. Brummitt, A. M. Webb. U. S. P. and N. F.—E. A. Ruddiman, J. M. Rogoff, Ira B. Clark, R. L. Eves, W. R. White, J. O. Burge. Program—Dr. J. M. Rogoff, chairman, J. B. Sand, R. L. Thompson. Entertainment—S. C. Davis, A. Nickel, G. H. King, J. R. Mansfield, E. Kemper. A communication from J. W. England, offering suggestions for the coöperation of the local Branches was read and referred to the Program Committee. Dr. Rogoff, the new chairman of the Program Committee, made an interesting talk and made some suggestions on the work of that committee. He said if the retail men would attend the meetings they could be made of great value to them, almost equivalent to a post-graduate course. He suggested that all persons interested in Pharmacy in any way be invited to attend the meetings as associate members. He thought the membership committee should invite all students of Pharmacy, Chemistry and Medicine attending the schools in the city, practising physicians and others in any way interested in Pharmacy. Mr. J. E. Justice, member of the Tennessee Board of Pharmacy, said the Board, which was then in session examining a class of 51 applicants, had delegated him to represent them at this meeting. He said they were much interested in the work of the Branch and would like any suggestions from the Branch for the betterment of Pharmacy. Dr. E. A. Ruddiman then moved that the Board be requested to increase the requirements for registration from a grammar school requirement to the equivalent of one year in a high school to take effect January 1st, 1916. Upon the adoption of the motion, Mr. Justice was requested to bring the motion before the Board at the present session.

About one hundred and fifty druggists from the city and its environs attended the meeting of the Branch on February 17.

President Trollinger presided and the meeting was addressed by Dr. Lucius P. Brown, Inspector for the State Board of Health, and Mr. Cecil Fraser, of the U. S. Internal Revenue office, on the subject of the Harrison Bill.

After their addresses the following questions were asked of them, all of which were answered in the negative:

Can a prescription be filled by telephone order? Can a "dope fiend" register and purchase from a wholesaler? Is an eye-water an external remedy? Is a physician limited in the amount he prescribes? Are

state and city laws made void by the National law? Will holders of "permits to sell drugs" in rural districts be permitted to sell narcotics if they register with the Internal Revenue Collector?

Concerning habitual users of such drugs, Doctor Brown stated that there were 2370 persons holding permits to use such drugs in the state and he believed that number was not more than half of those habitually using them.

A committee consisting of C. C. Young, E. A. Ruddiman, D. J. Kuhn, Ira B. Clark, and C. S. Martin was then appointed to confer with Dr. Brown in drafting a new state law to conform with the federal law.

Dr. J. M. Rogoff read a paper entitled "Professional Side Lines" in which he discussed the opportunities of pharmacists for work along lines of physiological analysis, the examination of sputa, urine, etc., and urged them to activity in this direction.

Dr. Burge took advantage of the presence of many druggists to place before them the advantages of membership in A. Ph. A. and invited all to join in its work.

W. R. White, Secretary.

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PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday evening, February 9th, at the Philadelphia College of Pharmacy.

President E. Fullerton Cook called the meeting to order at 8:30 p. m. The minutes of the last meeting were read and approved.

The President appointed Mr. Joseph W. England, Prof. Henry Kraemer and Mr. Franklin M. Apple as a committee on nominations. The committee was instructed to submit nominations to be balloted upon for the officers of the local Branch at the March meeting.

Mr. Dell W. Youngken was unanimously elected to membership in the Association.

The programme was then taken up and Mr. Richard Cuthbert, Jr., presented an interesting paper on "The Professional Ideals of Pharmacy." In the absence of Dr. F. E. Stewart, his paper on "Professional Pharmacy from the Viewpoint of the Commercial Laboratory," was read by the Secretary.

Prof. Julius W. Sturmer presented "The Current Review of Pharmaceutical Journals."

The papers submitted were discussed by Messrs. W. G. Nebig, Franklin M. Apple and Prof. Joseph P. Remington.

Not a little of the success of the meeting was due to the interesting display—One display consisted of a large number of preparations made in accordance with the new U. S. P. and N. F.; the other an "Exhibit of Filled Prescriptions," by Walter S. Froelich was of unusual excellence.

A vote of thanks was given to the contributors of the programme after which the meeting adjourned. Respectfully,

J. Ed. Brewer, Secretary.

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ST. LOUIS.

The St. Louis Branch held its regular monthly meeting in the St. Louis College of Pharmacy, February 19. Leo R. Suppan, B. Sc., presented a paper, illustrated with slides, on "The Monastic Dispensaries of the Middle Ages—A Chapter in the History of Pharmacy." Dr. Whelpley, Prof. Francis Hemm, Dr. Gustav Rehfeld, briefly discussed some phases of the Harrison Anti-Narcotic Law.

J. W. Mackelden, Actg. Secretary.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the Journal unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

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Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

Dyer, N. Ernest,
From 332 Tremont St., Boston, Mass.
To 981 a Tremont St., Boston, Mass.

Sohrbeck, G. H.,
From 3rd Av. and 16th St., Moline, Ill.
To 5th Av. and 16th St., Moline, Ill.

Stevenson, A. E.,
From 1539 Vermont St., Lawrence, Kans.
To 1312 Mass. St., Lawrence, Kans.

STURMER, J. W.,
From 17th and Cherry St., Philadelphia, Pa.
To 1715 Cherry St., Philadelphia, Pa.

WHITTLESEY, H. H.,
From 240 E. Centre St., Pocatello, Idaho.
To East Side Pharmacist, Pocatello, Idaho.

WILLIAMS, L. S.,
From St. Paul and 24th St., Baltimore, Md.
To 1300 N. Caroline St., In care Morgan & Willard, Baltimore, Md.

JOHNSON, R. V.,
From Hosp., Columbus Barracks, Columbus, Ohio.
To Ambulance Co. No. 8, U. S. A., Galveston, Texas.

HERMAN, CHRISTOPHER,
From Ft. Shafter, Honolulu, Hawaii Islands.
To Presidio of Monterey, Cal.

HARPER, J. E.,
From Clearwater, Neb.
To Spencer, Neb.

SIZEMORE, C. R.,
From 3024 Easton Av., St. Louis, Mo.
To 3874 Page Blvd., St. Louis, Mo.

BALMERT, C. A.,
From care Cirto Chem. Co., Maywood, N. J.
To care Emerson Drug Co., Lombard St., Baltimore, Md.

LEET, R. A.,
From Box 492 Oakland, Cal.
To Box 477, Oakland, Cal.

LOW MARGEREY D.,
From St. Francis Hosp., San Francisco, Cal.
To Mrs. Harry Low, Apt. 402-1625 Polk St., San Francisco, Cal.

WHITTLE, W. A.,
From 308 W. Lombard St., Baltimore, Md.
To 802 Gosuch Av., Baltimore, Md.

HICKS, G. W.,
From Hosp. Camp McGrath, Prov. Batangas, P. I.
To Fort Ethan Allen, Vermont.

KISHON, A. M.,
From Post Hosp. F. D. A. Russell, Wyo.
To Residence Unknown.

O'GORMAN, T. V.,
From 2009 Vallejo St., San Francisco, Cal.
To Box 608, San Jose, Cal.

REMIREZ, FRANCISCO,
From 498 Jesus del Monte, Havana, Cuba.
To Residence Unknown.

REITER, HARRY LEO,
From Camp Ward Cheny, Cavite, P. I.
To Fort Levett, Me.

WEBB, EVANS HALL,
From 1421 9th St., No. Nashville, Tenn.
To Residence Unknown.

TOCCO, ORAZIO,
From 95 Chrystie St., Brooklyn, N. Y.
To 81-83 Chrystie St., Brooklyn, N. Y.

SMITH, C. E.,
From 640 Bedford Av., Brooklyn, N. Y.
To 5 Beekman St., New York, N. Y.

KUTCHBAUCH, J. F.,
From 1707 Blue Rock St., Cincinnati, O.
To 1510 Scott St., Covington, Ky.

WEBSTER, J. H.,
From 933 Champlain St., Detroit, Mich.
To 933 E. Lafayette, Detroit, Mich.

CORREA, J. F., JR.,
From 47 St. Botolph St., Boston, Mass.
To 426 Newbury St., Boston, Mass.

BOLENBAUGH, ALBERT,
From Dept. of Pharm., Univ. College of Medicine, Richmond, Va.
To School of Pharm. College of Va. Richmond, Va.

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Scientific Section

Papers Presented at the Sixty-Second Annual Convention

PRELIMINARY NOTE ON A NEW PHARMACODYNAMIC ASSAY METHOD,

CARASSIUS AURATUS (GOLD FISH) AS TEST ANIMALS FOR THE DIGITALIS SERIES.

PAUL S. PITTENGER, PHAR. D., AND CHAS. E. VANDERKLEED, PHAR. D.

"The purpose of the pharmacodynamic assay just as of the chemical assay is to secure a means of measuring therapeutic activity and to make it possible to furnish *uniform* preparations. A satisfactory method which meets these requirements may or may not involve the production of physiologic reactions similar to those for which the drug is intended to be the means of producing when used therapeutically. That the effect chosen as a means of standardization does not parallel the clinical effect sought is not sufficient to condemn the method. It is only necessary that the effect chosen as an earmark is always indicative of a good quality of the drug or preparation, and criticisms of methods on the ground that they are *toxic* methods or that the animal chosen is biologically much different than man are made only through a lack of conception of the real purpose of the pharmacodynamic test, namely, to secure *uniformity*. The determination of the real value of a drug in the treatment of disease in man is another matter entirely."[1]

[1] Quoted from "Modern Methods of Drug Standardization," by Stewart, Hitchins, Elgin, Vanderkleed and Pittenger, Monthly Cyclopedia and Medical Bulletin, January, February and March, 1913.

Since biologic standardization was first proposed in 1898 the methods of assay employed for the digitalis series have been for the most part, not new but merely quantitative applications of the methods which had been used to elicit the drugs' actions. Of the many methods proposed, with their various modifications, there are only three which have been extensively used for standardization purposes, i. e., Houghton's "12 hr." frog method, Famulener and Lyons' "1 hr." frog method and Reed and Vanderkleed's guinea pig method.

Although the above methods all give more or less satisfactory results and have been revolutionary in that they have enabled the manufacturer to supply the physician with preparations of known and definite activity, there are still some things to be desired, first, a reduction in the cost of the assay; second, a more sensitive method, and third, a method simple enough that any competent pharmacist or physician can carry it out equally as well as the expert.

Just three weeks ago, one of the authors[2] conceived the idea of using fish as test animals by placing them in varying dilutions of the drug and noting the minimum dilution which will cause the death of the animal in a given time.

In experiments on frogs and guinea-pigs we have always been of the opinion that after taking care of the weight and temperature factors, the most important cause of animals' dying or recovering "out of order" is the marked variation in rate of absorption. The great absorptive power of the gills of a fish, together with the fact that they contain a large number of blood vessels through which the blood circulates direct from the heart, made this animal present itself as a possible means of eliminating these variations due to absorption.

Accuracy being the prime requisite for any assay method, it was first necessary, therefore, to determine whether or not the fish would die in direct proportion to the strength of the dilution in which they were placed. Accordingly the following experiment was carried out on gold fish.

Preparation Employed, Fld. Ext. Digitalis No. 1—Experiment No. 1.

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Weight of Fish	Time Required to Cause Death
1— 750	0.4 cc.	25° C.	4.3 gm.	2 hours, 1 minute
1—1000	0.3 cc.	"	4.4 gm.	3 hours, 7 minutes
1—1250	0.24 cc.	"	2.5 gm.	4 hours, 59 minutes
1—1500	0.2 cc.	"	4.0 gm.	7 hours, 2 minutes
1—1700	0.192 cc.	21° C.	4.0 gm.	9 hours, 7 minutes
1—1800	0.166 cc.	"	3.4 gm.	21 hours, 3 minutes
1—1900	0.157 cc.	"	3.5 gm.	22 hours, 16 minutes
1—2000	0.15 cc.	"	3.2 gm.	24 hours, 58 minutes

The dilutions were made with "tap water," 300 cc. placed in an 800 cc. beaker and the fish added. No attention was paid to weight or temperature other than recording the same.

The experiment was repeated with tincture of digitalis, with the following result:—

[2] Pittenger.

Experiment No. 2.

Dilution	Actual Amt. of Tinct. Contained in 300 cc Water	Temperature	Weight of Fish	Time Required to Cause Death
1— 75	4.0 cc.	27—28° C.	3.2 gm.	2 hours, 17 minutes
1—100	3.0 cc.	" "	4.1 gm.	11 hours, 45 minutes
1—125	2.4 cc.	" "	3.8 gm.	16 hours, 45 minutes
1—150	2.0 cc.	" "	2.9 gm.	20 hours, 15 minutes
1—170	1.92 cc.	" "	3.7 gm.	24 hours, 20 minutes
1—180	1.68 cc.	" "	4.0 gm.	Recovered after 30 hours

It will be noted from the above results that, although in some cases the strength of the dilutions varied only 5%, *every* fish died in order in accordance with the dilution of the solution in which it was placed.

Next the variation between the strength of the dilutions was still further diminished in order to determine the limit of sensitiveness of these animals.

Preparation Employed, Fld. Ext. Digitalis No. 1—*Experiment No.* 3.

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Weight of Fish	Time Required to Cause Death
1—1000	0.3 cc.	27° C.	4.4 gm.	2 hours, 23 minutes
1—1025	0.288 cc.	"	2.8 gm.	2 hours, 53 minutes
1—1050	0.285 cc.	"	3.3 gm.	3 hours, 40 minutes
1—1075	0.275 cc.	"	3.8 gm.	3 hours, 18 minutes

Preparation Employed, Fld. Ext. Digitalis No. 2—*Experiment No.* 4.

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Weight of Fish	Time Required to Cause Death
1—1000	0.3 cc.	26° C.	3.0 gm.	1 hour, 20 minutes
1—1025	0.288 cc.	"	3.8 gm.	1 hour, 25 minutes
1—1050	0.285 cc.	"	3.2 gm.	1 hour, 36 minutes
1—1075	0.275 cc.	"	2.1 gm.	1 hour, 35 minutes

Preparation Employed, Fld. Ext. Digitalis No. 2—*Experiment No.* 5.

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Weight of Fish	Time Required to Cause Death
1—1500	0.2 cc.	27.5° C.	2.8 gm.	1 hour, 15 minutes
1—1525	0.196 cc.	"	2.8 gm.	1 hour, 36 minutes
1—1550	0.194 cc.	"	3.0 gm.	1 hour, 10 minutes
1—1575	0.193 cc.	"	2.5 gm.	1 hour, 14 minutes
1—1600	0.187 cc.	"	3.4 gm.	1 hour, 38 minutes

Exp. No. 3 shows that with a variation as small as 2.5% in the strength of the dilutions, all but one fish died in order. Exp. No. 4 and 5, Fld. Ext. No. 2 (which was a preparation possessing greater activity than Fld. Ext. No. 1) show greater discrepancies. In this case, 3 of 9 fish died "out of order."

The facts that of Fld. Exts. No. 1 and 2, the weaker preparation gave the better results and that in Exp. No. 1 and 2 where the length of time required to cause

death was greater than in Exp. No. 4 and 5 (due to the use of a weaker preparation), not a single fish died "out of order," indicated that decreasing the strength of the dilutions would increase the sensitiveness of the test. The next experiments were, therefore, made with weaker solutions in order to prove this point.

Preparation Employed, Fld. Ext. Digitalis No. 2—*Experiment No. 6.*

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Weight of Fish	Time Required to Cause Death
1—1850	0.162 cc.	28° C.	2.4 gm.	1 hour, 10 minutes
1—1900	0.157 cc.	"	3.1 gm.	1 hour, 27 minutes
1—1950	0.154 cc.	"	3.4 gm.	1 hour, 49 minutes
1—2000	0.15 cc.	"	2.9 gm.	1 hour, 57 minutes

Experiment No. 7.

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Weight of Fish	Time Required to Cause Death
1—3500	0.0857 cc.	29° C.	3.1 gm.	2 hours, 58 minutes
1—3550	0.0845 cc.	"	4.0 gm.	3 hours, 55 minutes
1—3600	0.0833 cc.	"	4.2 gm.	3 hours, 48 minutes
1—3700	0.0810 cc.	"	3.8 gm.	4 hours, 30 minutes
1—3800	0.0789 cc.	"	4.6 gm.	6 hours, 6 minutes

These results show very clearly that decreasing the strength of the dilution prolongs the time required to cause death and thereby greatly increases the sensitiveness of the test. It will be noted that a variation of less than 3% in the strength of the dilutions, or, in other words, a difference of only 0.0021 cc. in the actual amount of Fld. Ext. contained in the 300 cc. water in which the fish were placed, caused a difference of one hour and 30 minutes in the length of time required to produce death.

That the weight of the fish is of no importance is clearly demonstrated by the fact that in the foregoing experiments, although some of the fish weighed more than twice as much as others, practically all died in the order of the dilution of the solutions in which they were placed.

In order to determine whether or not *large* variations in the weight of the fish would influence the results, the following experiment was carried out:—The size of the large fish used made it necessary to place each animal of the series in 1000 cc. of the dilution instead of 300 cc., as was used in the preceding experiments.

Preparation Employed, Fld. Ext. Digitalis No. 2—*Experiment No. 8.*

Dilution	Temperature	Weight of Fish	Time Required to Cause Death
1—1000	27.5° C.	34.1 gm.	58 minutes
1—1000	"	27.9 gm.	52 minutes
1—1000	"	5.5 gm.	59 minutes
1—1000	"	5.0 gm.	47 minutes
1—1000	"	2.3 gm.	54 minutes
1—1000	"	3.1 gm.	55 minutes

It will be noted that, although the largest fish weighed *more than ten times as much as the smallest*, the length of time required to cause death, when immersed

in solutions of the same strength, varied but 12 minutes. These results would tend to prove conclusively that the weight of the animal can be disregarded when making tests by this method.

It was noticed that, although each series of dilutions gave concordant results within 2½%, there was a variation between the different series, in the length of time required to produce death by solutions of the same strength. This discrepancy suggested a variation due to differences in temperature. The following table shows the results of an experiment to determine the effect of temperature on the resistance of gold fish:—

Preparation Employed, Fld. Ext. Digitalis No. 2—*Experiment No.* 9.

Dilution	Temperature	Weight of Fish	Time Required to Cause Death
1—1000	38 to 39° C.	4.7 gm.	46 minutes
1—1000	26.5 to 27° C.	4.2 gm.	2 hours, 55 minutes
1—1000	12 to 17° C.	3.9 gm.	7 hours, 21 minutes

It is apparent from this single experiment that temperature is of the utmost importance and that in order to obtain concordant results it will be necessary to carry out all assays at exactly the same temperature. This can easily be accomplished, however, by immersing the beakers containing the dilutions in a constant temperature bath. The best temperature to employ still remains to be determined.

Next eight fish were placed in beakers, each containing exactly the same strength solution in order to determine the individual variation in susceptibility.

Preparation Employed, Fld. Ext. Digitalis No. 2—*Experiment No.* 10.

Dilution	Actual Amt. of F. E. Contained in 300 cc. Water	Temperature	Time Required to Cause Death
1—3500	0.0857 cc.	28.5° C.	2 hours, 47 minutes
1—3500	0.0857 cc.	"	3 hours, 12 minutes
1—3500	0.0857 cc.	"	3 hours, 18 minutes
1—3500	0.0857 cc.	"	2 hours, 59 minutes
1—3500	0.0857 cc.	"	2 hours, 43 minutes
1—3500	0.0857 cc.	"	3 hours, 8 minutes
1—3500	0.0857 cc.	"	3 hours, 4 minutes
1—3500	0.0857 cc.	"	2 hours, 51 minutes

The last fish died 35 minutes after the first one. For comparison 8 guinea pigs were injected with exactly the same dose (1½ times the usual m. l. d.) per 250 gm. body weight, and it was found that the sixth pig died 1 hr. and 28 minutes after the first. The remaining two pigs were still alive at the end of 12 hours. I was unable to obtain frogs in time to make a comparison with these animals, but it is generally admitted by most workers that the variation in frogs is more marked than in guinea pigs.

In experiment No. 2 with tincture digitalis, the presence of the alcohol which was not removed did not interfere with the results. It was possible, however, that the alcohol might have increased or decreased the length of time required to cause death for the whole series. Fish were, therefore, placed in four 1-1000 dilutions of Fld. Ext. Digitalis; two with 1.5 cc. alcohol added (the amount which would be

contained in 3.0 cc. Tinct Digitalis) and two without alcohol. The results follow:—

Experiment No. 11.

Dilution	Time Required to Cause Death
1—1000 without alcohol	2 hours, 35 minutes
1—1000 without alcohol	2 hours, 20 minutes
1—1000 1.5 cc. alcohol added	2 hours, 7 minutes
1—1000 1.5 cc. alcohol added	2 hours, 27 minutes

It would appear from the above results that alcohol to the extent of that contained in the U. S. P. tincture does not affect the results. More extensive experiments, however, are necessary before definite conclusions may be drawn in regard to this point.

The time being limited, it was impossible to carry out all the experiments which suggested themselves in time for this preliminary report. We shall, therefore, continue our investigations in an endeavor to determine the following:—

1. The best time limit and,
2. The most suitable dilution, leading to
3. Tentative standards.
4. Action of other members of the digitalis group.
5. Extent of seasonal variations.
6. Best temperature to employ.
7. More extensive experiments on the effect of alcohol.
8. The possibility of the application of this method to standardizing biologic products, such as antitoxins, sera, etc.

SUMMARY.

The results of the foregoing experiments, together with experience with other methods so far proposed, lead to the following conclusions:—

1. Gold fish are sensitive to variations of 2½% in the strength of the dilutions of digitalis in which they are placed.
2. Variations due to differences in the rate of absorption appear to be practically eliminated by the use of these animals.
3. Decreasing the strength of the dilution, increases the sensitiveness of the test.
4. The weight of the fish may be disregarded when making tests by this method.
5. Variations in the temperature markedly influence the resistance of gold fish to digitalis poisoning.
6. The individual variation in the susceptibility of gold fish is much less than that found in guinea pigs and frogs.
7. The gold-fish method is unquestionably the simplest so far proposed and can easily be carried out by those not especially skilled in the pharmacodynamic art.
8. The inexpensiveness of the assay is decidedly in its favor. Gold fish of the proper size can be purchased wholesale for from 45 to 60 cents per dozen.
9. A sufficient number of animals can be procured at all seasons of the year.

Pharmacodynamic Laboratory, H. K. Mulford Company, August 20, 1914.

DISCUSSION.

DR. EDWARD KREMERS:—Is the application of this method new in this country?

DR. PITTENGER:—New, so far as I know.

DR. KREMERS:—Gold fish have been used in other work?

DR. PITTENGER:—Yes, I think they have been used in other work, but so far as I am acquainted with the literature this is the first attempt that has been made to use these animals as a means of quantitatively testing the activity and thereby standardizing galenical preparation or antitoxins.

DR. KREMERS:—I think Dr. Stockberger could tell us something about that. Is he here in the room? Dr. R. H. True worked with gold fish along similar lines some years ago before he went to work in the Department of Agriculture.

DR. STOCKBERGER:—Yes, both Dr. Kahlenberg and Dr. True have conducted work with fish and tadpoles along somewhat similar lines, but the application, of course, was in an entirely different direction. The fish were used merely as a reagent, you might say, in testing the toxicity of various chemical solutions. I do not know that this method has been used in testing galenicals prior to Dr. Pittenger's work.

DR. KREMERS:—The principle was different.

DR. STOCKBERGER:—The principle was different, but the use practically was very similar.

MR. A. J. MEIER:—I would like to ask whether any experiments were carried out to determine whether or not the fish would live from twenty-two to twenty-four hours if left in ordinary water without changing at room temperature when such small amounts of water were employed?

DR. PITTENGER:—No. Such experiments were not necessary as Experiment No. 2 shows that one fish was still alive after being kept for thirty hours in only 300 cc. of a 1-180 dilution of tincture of Digitalis. Table No. 1 also shows that some fish lived for twenty-two to twenty-four hours in this amount of solution.

MR. MEIER:—Without any change of water, or getting oxygen in the water?

DR. PITTENGER:—Yes. It would not be advisable, however, to employ so small a quantity of solution if twenty-four hours should eventually prove to be the best time limit. As stated in the paper the best time limit has not yet been determined. The 300 cc. of solution were merely arbitrarily adopted at the beginning of the experiment when I had no idea as to the length of time which would be required for the fish to die when placed in the different strength solutions employed. It merely happened that some of these fish lived for twenty-four hours. If this should eventually be chosen as the time limit the quantity of the dilution would necessarily have to be increased. The fact that one fish recovered after twenty-four hours shows that such factors had no apparent effect in this time and that by using a shorter end point their effect would be practically *nil*.

DR. KREMERS:—Wasn't the fish which recovered seemingly dead? Is it hard to tell just when a fish dies?

DR. PITTENGER:—No it wasn't. Apparently it was just as much alive as when placed in the solution. It is very easy to note when a fish dies. It generally first turns over on its side and a little later becomes motionless.

DR. KREMERS:—Did you try to see if you could revive those which were seemingly dead by putting them in salt water?

DR. PITTENGER:—No, I did not as that would have interfered with our results. I know however, that gold fish breeders revive their sick fish by that method.

EXAMINATION OF CALYCANTHUS FLORIDUS FOR ALKALOIDS.

E. R. MILLER AND H. W. BROOKS.

One of the widely-known and popular plants indigenous to the Southeastern States, is *Calycanthus floridus,* a shrub from 2 to 8 feet high, growing from Virginia to Florida and Alabama.

Its chief characteristic, which has won for it almost first place among the wild flowers, is not the size and beauty of its blossoms, but rather their delightful fragrance. To this it owes the almost universal name of "Sweet Shrub."

As a medicinal plant it is not of much importance, but is said to be antiperiodic, stimulant and tonic. The bark has an agreeable, spicy, camphoraceous odor which no doubt suggested the names Carolina allspice, Florida allspice, etc.

Inasmuch as alkaloids have been discovered in the seeds of another species of

the genus, namely, *Calycanthus glaucus*,* we decided to make an examination of the flowers, leaves and roots of the species *C. floridus*.

The roots were dried before extracting, but the flowers and leaves were used in the fresh condition.

About 200 gm. of each of the parts named were extracted by maceration with 95% alcohol which had been distilled over tartaric acid. The filtered alcoholic extract was distilled on a water bath until the greater part of the alcohol had been removed. The residue was then treated with water until no further precipitation resulted. The resinous and oily matter was removed by filtration and the filtrate evaporated to a small volume on a water bath. In the case of the root this aqueous extract was rather milky in appearance, and was cleared up by shaking out with ether. The aqueous liquid was then made slightly alkaline with ammonia and extracted in succession with ether, chloroform, petroleum ether and benzene. After evaporation of the immiscible solvent the residue was treated with a small amount of water acidulated with dilute H_2SO_4, and tested with general alkaloidal reagents. The following results were obtained:—

SOLUTION FROM ETHER EXTRACT.

	Roots	Flowers	Leaves
Potass mercuric iodide	Slight ppt.	Yellowish White ppt.	Heavy White ppt.
Co. Solution iodine...	Reddish ppt.	Heavy Brown ppt.	Red ppt.
Potass Bismuth iod..	Red ppt.		
Tannic acid.....	No ppt.	No ppt.	No ppt.
Phosphomolybdic acid	No ppt.	No ppt.	Heavy White ppt.
Picric Acid.....	No ppt.	Yellow ppt.	Yellow ppt.

The chloroformic extract of the flowers gave precipitates with phosphomolybdic acid and solution iodine compound. The petroleum ether extract of the flowers gave a ppt. with sol. iod. comp. The benzene extract of the leaves gave a white ppt. with potass. mercuric iod.; a red ppt. with sol. iod. co. and a greenish-yellow with picric acid, and the ether extract from the leaves gave a heavy white ppt. with potass. mercuric iod.; a red ppt. with co. sol. of iodine; a heavy white ppt. with phosphomolybdic acid and a yellow ppt. with picric acid.

The results obtained make it highly probable that the plant contains alkaloids, especially in the leaves, the extract from which produced the most abundant precipitation with the alkaloidal reagents. Considering the nature of the solvents used in preparing the solutions to be tested it is scarcely probable that enough protein matter could have been present to give the abundant precipitation that was obtained in several cases.

The subject will be further investigated as soon as sufficient material can be obtained.

Alabama Polytechnic Institute.

* Dr. R. G. Eccles, Proc. Am. Pharm. Assoc., 1888, 84, 382.
Dr. H. M. Gordin, Proc. Am. Pharm. Assoc., 1904, 345; 1905, 224; 1908, 805; 1909, 889.
Jour. Am. Chem. Soc. 1905, 141.

THE ANALYSIS OF CIGARETTES, CIGARS AND TOBACCO, AND THE USE OF LLOYD'S REAGENT IN THE DETERMINATION OF NICOTINE.

AZOR THURSTON.

INTRODUCTION.

Some six months ago while in conversation with Hon. S. E. Strode, Commissioner in charge of the Dairy and Food Division of Ohio, the question of adulteration of cigarettes and other tobacco products came up and the statement was made by some one present that large quantities of tincture of opium were being purchased by manufacturers of this line of goods. An investigation was therefore ordered, not only as to opium, but as to medicinal substances in general. It fell to the lot of the writer to make whatever investigation as was deemed necessary.

The most natural thing to do was to look up the literature on the subject and, to my surprise, I was unable to find a published account of the analysis of cigarettes or cigars, although other tobacco products were fairly covered in reference to nicotine and some other constants. I therefore wrote to the Bureau of Chemistry, U. S. Department of Agriculture, where one naturally expects to obtain methods of analysis of practically everything, and again I was doomed to disappointment, the reply indicated that methods had not been developed for making analyses of cigarettes, although the department had made a few examinations of cigarettes with the view of determining whether or not they contained opium or arsenic.

I found in Wiley's Agricultural Analysis[1] a statement in reference to opium and cigarettes as follows:—"It is believed, however, that opium is not often found in manufactured tobacco, and it has never been found in this laboratory in cigarettes, although all the standard brands have been examined for it."

I at once took the matter up with Dr. Wiley by correspondence, and received a reply as follows:—

"As far as I know opium, arsenic, etc., have never been found in cigarettes. This is a rumor which is constantly being floated, but is without general foundation. The cigarettes are harmful enough in themselves without seeking this extreme evil in them. None of the results referred to were ever published as far as I know. You can perhaps get more definite information concerning this investigation from Mr. McElroy himself, as he is a practicing chemical patent attorney in this city. The address is K. P. McElroy, 918 F Street. I have no special data on the subject of the cigarette evil, but am unalterably opposed to the use of tobacco in any form, as I consider it an unclean, unhealthy habit which diminishes the vitality and the efficiency of the user, and is, moreover, an imposition on the public who do not use it."

Upon receipt of Dr. Wiley's letter it appeared I would corner the information I most desired, and I immediately wrote to Mr. McElroy for more light upon the subject. He promptly replied as follows:—

"I regret to say that I can give you very little information concerning the analyses of cigarettes at the present day. What analytical work I did was done very many years ago and the results were never published to my knowledge, having been made for the information of a congressional committee.

"About all I remember of the matter at present is that in the twelve or thirteen brands I analyzed I did not, of course, find morphine, arsenic, and other alleged ingredients. Neither did I find Alfalfa, a common rumor to the contrary notwithstanding. I found considerably more nicotine than expected."

[1] Wiley's Agricultural Analysis, Vol. III, 597.

During this correspondence the inspectors had delivered to me a number of samples for analysis, and I decided to begin the investigation along lines that appeared most desirable the details of which follow.

Preparation of Samples:—The samples were not dried except as they were kept in the laboratory at a temperature of about 25° C. Any attempt at artificial drying might be at the sacrifice of nicotine and was, therefore, not attempted. The samples were next powdered, so as to pass through a number 20 sieve. If finer so much the better, but it is some difficulty to obtain a powder of this fineness, even after passing the sample through a meat-chopper several times. In case of cigarettes the papers were removed and all particles of the filler carefully dusted off so as to obtain the papers as free from the filler as possible. Separate analyses being made of the papers.

The Analysis:—Determinations were made as follows:—Nicotine, ash, water soluble ash, water insoluble ash (by difference), hydrochloric acid insoluble ash, alkalinity of water soluble ash, alkalinity of water insoluble ash, opium and other drugs.

The same determinations were made of the papers, except for nicotine, and further tests were made for nitrates in the papers.

RESULTS OF ANALYSIS OF TWO BRANDS OF CHEAP CIGARS.

No.	Brand	Nicotine	H_2O Sol. Ash	H_2O Ins. Ash	HCL Ins. Ash	Total Ash	Ash H_2O Sol. Ash	Alk. H_2O Ins. Ash	Total Alka-Ash
4536	Cobs	1.48	7.15	14.88	2.36	22.03	4.15	28.85	33.00
4539	Havana Plumes	1.26	5.83	14.58	4.27	20.41	3.60	29.90	33.50
Average		1.37	6.49	14.73	3.31	21.22	3.87	29.38	33.25

RESULTS OF ANALYSIS OF THREE SAMPLES OF TOBACCO LEAVES WITH MIDRIBS REMOVED.

No.	Habitat	Nicotine	H_2O Sol. Ash	H_2O Ins. Ash	HCL Ins. Ash	Total Ash	Alk. H_2O Sol. Ash	Alk. H_2O Ins. Ash	Total Alkalinity Ash
4540	Ohio	3.34	8.42	13.76	2.33	22.18	4.80	24.55	29.35
4611	Vir.	3.38	5.17	6.79	2.04	11.96	4.15	9.95	14.10
4612	Vir.	2.41	3.97	8.39	2.49	12.36	1.55	13.05	14.60
Average		3.04	5.85	9.65	2.29	15.50	3.50	15.85	19.35
Ribs from 4540		1.48	9.53	8.82	.43	18.35	6.40	18.20	24.60

No. 4612 was a bleached tobacco used for the manufacture of cigarettes.

METHODS OF ANALYSIS.

Nicotine.—As the amount of nicotine present determines the strength of the tobacco this estimation is of great importance.

Numerous methods have been proposed for the determination of nicotine, but they all practically are included in three divisions.

The Kissling[2] method is the official method of the Association of Official Agricultural Chemists and consists in making the sample alkaline and extracting with

[2] U. S. Dept. Agr. Bureau of Chemistry Bulletin 107 (Revised), 32.

No.	Brand	Nicotine	FILLER.							PAPERS.						
			H_2O Sol. Ash	H_2O Ins. Ash	HCl Ins. Ash	Total Ash	Alk. H_2O Sol. Ash	Alk. H_2O Ins. Ash	Total Alkalinity Ash	H_2O Sol. Ash	H_2O Ins. Ash	HCl Ins. Ash	Total Ash	Alk. H_2O Sol. Ash	Alk. H_2O Ins. Ash	Total Alkalinity Ash
4521	Nebo	2.03	3.46	18.34		21.80	1.53	12.18	13.71	3.21	14.30		17.51	6.03	26.60	32.63
4522	Fatima	2.79	3.53	11.15	2.69	14.68	1.56	13.42	14.98	1.02	18.79		19.81	.99	40.79	41.78
4523	Hassan*	1.94	3.73	12.83	4.31	16.56	2.35	7.40	9.75	.92	17.36	2.24	18.28	1.06	51.57	52.63
4524	Sweet Caporal	2.05	3.02	10.49	4.90	13.51	.97	11.53	12.50	.96	1.06		2.02	3.25		3.25
4525	Nebo*	1.93	4.03	11.71	3.20	15.74	1.98	18.38	20.36	2.29	14.13	.36	16.42	5.59	29.96	35.55
4526	Helmar	1.56	4.67	13.74	.02	18.41	3.89	22.69	26.58	.48	17.10	.02	17.58	.69	26.74	27.43
4527	Mogul*	1.45	3.81	10.94	1.55	14.75	1.87	19.61	21.48	1.78	15.31		17.09	5.30	34.08	39.38
4528	Egyptian*	1.59	4.09	14.74	3.15	18.83	2.72	24.40	27.12	1.08	17.16		18.24	1.83	36.26	38.09
4529	Omar	1.98	3.64	10.74	2.84	14.38	2.35	18.44	20.79	4.19	14.02	.45	18.21	.37	35.51	35.88
4530	Mural	1.52	3.48	12.92	2.13	16.40	3.71	22.87	26.58	1.04	16.72	.44	17.76	2.38	38.71	41.09
4531	Royal Nester	1.47	3.68	14.65	3.14	18.33	2.10	21.85	23.95	.47	17.94	2.88	18.41	.87	37.63	38.50
4532	Turkish Trophies	1.44	4.08	12.92	2.68	17.00	3.00	18.95	21.95	1.90	16.36	.25	18.26	6.34	33.88	40.22
4533	Home Run‡	1.89	5.69	13.79	3.06	19.48	4.25	22.40	26.65	.93	4.04	.78	4.97	1.98	9.18	11.16
4565	Home Run‡	1.67	5.48	12.87	2.30	18.35	4.25	22.50	26.75	1.60	2.95		4.55	4.01	8.63	12.64
4566	Home Run‡	1.78	6.06	13.41	2.31	19.47	4.60	27.95	33.55	1.11	3.58	.74	4.69	3.72	9.51	13.23
4534	Piedmont‡	3.34	3.06	8.92	2.72	11.98	.45	13.05	13.50	.94	4.29	.72	5.23	1.59	7.60	9.19
4535	Zubelda	1.97	3.63	10.68	1.93	14.31	2.28	18.55	20.83	1.49	20.63	.18	22.12	2.51	44.04	46.55
4537	LaLucbana‡	.43	6.92	15.01	2.12	21.93	6.50	23.60	30.11	2.16	10.25	1.13	12.41	2.03	21.61	23.64
4538	Tareyton	1.75	3.67	10.51	1.66	14.18	1.36	18.39	18.75	.29	15.45		15.74	1.74	29.79	31.53
4558	Egyptienne Luxury	1.60	3.88	12.11	2.03	15.99	2.75	20.00	22.75	.76	19.45	.59	20.21	1.23	52.87	54.10
4559	Fifty-six	1.43	3.27	12.23	2.09	15.50	3.10	19.45	22.55	2.17	14.19	1.92	16.36	6.39	30.68	37.07
4560	Rameses	1.73	3.14	13.50	3.16	16.64	1.85	20.20	22.05	1.75	12.13		13.88	3.99	30.46	34.45
4561	Schinasi	1.51	3.48	14.22	2.29	17.70	2.60	23.85	26.45	1.76	19.84	4.66	21.60	2.88	40.61	43.49
4562	Condax‡†	1.06	3.30	11.67	1.83	14.97	2.50	20.50	23.00	1.53	15.39	.18	16.92	3.26	45.64	48.90
4563	Egyptian Straights	1.45	3.98	13.70	2.67	17.68	2.50	22.80	25.30	2.86	15.09		17.95	7.61	36.45	44.06
4564	Egyptian Arabs	1.35	3.54	14.99	3.25	18.53	2.65	22.70	25 35	2.09	11.64	2.38	13.73	6.19	27.72	33.91
4579	Makaroff	1.21	1.02	15.65	2.48	16.67	2.50	22.00	24.50	.62	10.64	.41	11.26	1.03	26.61	27.64
4610	Phillip Morris & Co.	1.48	3.50	13.44	3.10	16.94	2.00	20.50	22.50	1.88	15.18	.18	17.06	3.27	39.21	42.48
	Average	1.69	3.89	12.92	2.13	16.81	2.64	19.65	22.29	1.54	13.39	.73	14.93	3.15	30.44	33.59

* Cork Tips.
‡ Responds to the test for nitrates in the papers.
† Straw Tips.

ether, evaporating the ether, and distilling the extract in a current of steam. The distillate is titrated with standard acid.

The Keller[3] method—The nicotine is extracted with proper solvents and air passed through the extract, to expel ammonia, and the extract finally titrated with standard acid.

The Bertrand & Javillier[4], or Silicotungstate method—As in the Kissling or similar methods the nicotine is extracted from the tobacco and the extract distilled in a current of steam and then the nicotine precipitated from the distillate as nicotine silicotungstate, a rose white salt with the following formula:—$2C_{10}H_{14}N_2$ $2H_2O$ SiO_2 $12WO_3 + 5H_2O$. This salt on being ignited leaves a residue or SiO_2 and WO_3 from which is calculated the weight of nicotine originally present. This method of analysis was used for the determination of nicotine as herewith tabulated except the first extracting was omitted and the nicotine determined in the tobacco by directly distilling in a current of steam and following out Chapin's[5] directions modified to read as follows:—Weigh out exactly 5 grams of the sample and wash, with about 25 cc. of water, into a 500 cc. Kjeldahl flask; add 1 to 1½ grams of paraffin, a few small pieces of pumice and 5 cc. saturated solution of sodium hydroxide. Distil in a rapid current of steam, through a condenser and adapter, into 10 cc. of dilute hydrochloric acid (¼) into a 1500 cc. flask. When distillation is well started, apply heat to the distilling flask so as to keep the volume as low as practical. Distil until the distillate measures about 1000 cc., or when treated with a drop of silicotungstic acid and a drop of hydrochloric acid no opalescence is produced. Make the distillate up to exactly 1000 cc., or some other convenient volume, with distilled water. Filter and place 100 cc. of filtrate in a 250 cc. beaker and add 3 cc. dilute hydrochloric acid (¼) or more if necessary to make the solution distinctly acid. Add 1 cc. of a 12 *per cent.* solution of silicotungstic acid for each 0.01 gram nicotine supposed to be present. Stir thoroughly and let stand for eighteen hours. Filter on an ashless filter and wash with dilute hydrochloric acid, 1 cc. concentrated acid to 1000 cc. water, until the filtrate is free of silicotungstic acid. Transfer the wet paper and precipitate to a weighed platinum crucible, using a scrap of moistened filter paper to transfer any precipitate which may have crept up the sides of the funnel; dry, carbonize and break up the precipitate with a platinum wire and finally cover the crucible and apply full heat of a Bunsen burner for fifteen minutes. Cool in a desiccator and weigh. The weight of the residue multiplied by 0.114 afford the nicotine in the aliquot taken for precipitation, and from this amount the percentage may be calculated.

Instead of precipitating with silicotungstic acid Emery[6] proposed to determine the amount of nicotine in the distillate by polarization and others have proposed to precipitate the nicotine with mercuric potassium iodid. It appears to the writer that the silicotungstic method is less liable to errors and it is susceptible of concordant results on duplication.

THE USE OF LLOYD'S REAGENT IN THE DETERMINATION OF NICOTINE.

This is merely a preliminary report on the determination of nicotine with Lloyd's Reagent as lack of time has prevented a thorough investigation, although

[3] J. Chem. Soc., 1899, Vol. 76, II, 193. Pro. A. Ph. A., 1900, Vol. 48, 392.
[4] J. Chem. Soc., 1909, Vol. 96, II, 450. Chem. Abs., 1909, Vol. 3, 1282 and 2107.
[5] U. S. Dept. Agr. Bureau of Animal Industry Bulletin 133.
[6] J. Am. Chem. Soc., 1901, Vol. 26, 1113.

sufficient work has been done to predict that a successful method might be worked out.

So far I have been unable to make close duplications and without going into details as to the different experiments made I will give the amount of nicotine found by the use of Lloyd's Reagent and by using silicotungstic acid:—

No.	Silicotungstic Method	Lloyd's Reagent
4524	2.05	1.80
4525	1.93	1.99
4527	1.45	1.99
4530	1.52	1.18
		2.06
4528	1.59	1.65
4535	1.97	1.51
4529	1.98	1.75
		1.99
4532	1.44	1.97

There have been a number of interesting articles[7] published in reference to Lloyd's Reagent which should be read by interested parties.

All methods of extracting the alkaloids of tobacco, includes the four alkaloids,—nicotine, nicotimine, nicoteine, and nicotilline. The three latter existing in such small quantities that they do not make much practical difference and usually the total amount of alkaloids extracted from tobacco is considered nicotine; however, as nicotine and nicotimine are volatile in a current of steam and the other two are not, by the distillation method the two non-volatile alkaloids are eliminated.

I find sulphomolybdic acid gives a blue coloration with nicotine, which might be easily mistaken for morphine, as practically the same coloration is produced with this reagent with both alkaloids. A drop of the reagent should be directly applied to the pure nicotine or to the solids containing nicotine—such as tobacco and tobacco extracts. The color is produced more rapidly if the substance is slightly warmed.

Ash:—Weigh exactly 2 grams of the sample in a platinum pan and incinerate. Any particles carbon can be removed by adding a few drops of water to the ash and after drying ignite for a few minutes. The average ash obtained from three samples of leaf tobacco was 15.50, from two samples of cigars 21.22, and from twenty-eight samples of cigarettes 18.81 *per cent.*

Alkalinity of Water-Soluble and Water-Insoluble Ash:—The water-soluble ash is determined by dissolving, in hot water, the soluble portion from the ash as above determined and titrating with N/10 acid, using methyl orange as indicator. The alkalinity of water-soluble ash is reported as the number of cubic centimeters of decinormal acid required to neutralize the ash from one gram of the sample.

The water-insoluble ash is dissolved in 5 cc. normal hydrochloric acid and the excess of acid estimated by titrating with decinormal alkali. The number of cubic centimeters of decinormal alkali used deducted from 50 will give the alkalinity of the water-insoluble ash. In a few cases it will be necessary to use 10 cc. normal acid as the alkalinity occasionally runs very high.

Hydrochloric Insoluble Ash:—Is determined by adding concentrated hydrochloric acid to the solution after determining alkalinity of the water-insoluble ash. Pass the bulk of the solution through an ashless filter and add concentrated hydro-

[7] J. Am. Chem. Soc., 1913, Vol. 35, 837. Am. Druggist, 1913, Vol. 61, 234. J. Am. Ph. Association, 1914, Vol. 3, 625-630.

chloric acid to the residue and wash the insoluble portion on the filter with distilled water. Incinerate the filter with residue in a platinum crucible. Cool, and weigh.

Opium and Other Drugs:—Macerate a few grams of the sample with alcohol for two or three hours. Filter and evaporate the filtrate to dryness. Extract the residue with dilute sulphuric acid and complete the investigation by shaking out according to Fuller's[8] scheme of analysis for separation and detection of substances in medicinal products.

The current report is that cigarettes contain opium or some form of "dope"; however, the brands I examined were free of added medicinal substances, barring calcium, magnesium and nitrates found in the papers.

Referring, again, to sulphomolybdic acid test for nicotine, I wish to call your attention to the fact that morphine might be easily mistaken for nicotine. For instance, after shaking out the alkaline solution with petroleum ether, for nicotine, and then with a mixture of chloroform and alcohol (2 : 1) for morphine and evaporating the solvent I added a drop of sulphomolybdic acid to the residue and a blue color was at once produced, indicating morphine. As the brand of cigarettes tested was manufactured by a company of high reputation it did not appear probable they would use opium in their goods. Therefore, I extracted the nicotine from a distillate of known purity and applied sulphomolybdic acid to the residue and the blue coloration was at once produced.

If, for any reason, only one test is to be applied to the extract for the detection of morphine, use formaldehyde-sulphuric acid (10 cc. formaldehyde solution to 50 cc. concentrated sulphuric acid). A deep purple color indicates morphine and no coloration is produced with nicotine.

CIGARETTE PAPERS.

So far as I know nearly all cigarette papers have chemical fillers added, presumably to improve their burning qualities; however, if the ingredients are harmless there should be no particular objection to their use.

Prominent manufacturers kindly furnished the analysis of two brands of cigarette papers and, as I have not been able to find this subject covered in the published literature I consider them of sufficient interest to reproduce same in this paper.

"ANALYSIS OF CIGARETTE PAPERS.

	Austrian	French
Moisture	4.30	4.62
Ash		
Calcium oxide	4.95	5.12
Magnesium oxide	88.80	84.02
Iron, alumina and silica oxides	4.00	4.68
Chlorides	trace	trace
Nitrates	none	none
Sodium and potassium salts	trace	trace
Fiber	linen	linen
Organic fillers	starch	starch
Soluble constituents	alkaline	alkaline
Carbonates in filler as CO_2, at least	2.00	2.00

REMARKS.

"The papers were all what would be technically known as 'very moderately' sized as they carry small amount of starch, along with the filler which was composed of varying amounts

[8] Fuller's Qualitative Analysis of Medicinal Substances.

of calcium, aluminum and magnesium oxides and carbonates. There was also present small amounts of iron and silica which would be present from the wash water used in the preparation of the pulp or in many other ways.

"The fiber present in the pulp was found to be composed of linen, very well pulped except for a very few bunches of undigested or unbeaten fiber which it is impossible to overcome. No test for other fibers was obtained. No acids, sulphur compounds or chlorine was found which might have come from the process of manufacture. The paper gave an alkaline reaction due to the filler used which was composed of calcium, aluminum and magnesium carbonates and oxides. The carbonates present were equal to at least 75% of the ash and probably more, but it was impossible to determine this very accurately. No impurities other than those mentioned were found. The moisture found was of varying weight, due to the fact that paper of the variety examined has a tendency to hold moisture proportionate to the humidity of the atmosphere of the date of examination."

I wish to call particular attention to the small amount of ash shown by these analyses compared with the amount actually found by the writer in twenty-eight samples which yielded an average percentage of 14.93.

NITRATES IN PAPERS.

It appears that the majority of manufacturers object to paper containing nitrates.

Nitrates may be detected by applying the diphenylamine test as follows:— Take one drop diphenylamine test solution on a glass rod and draw the rod lightly and quickly across the paper. Hold the paper to the light and within five or ten seconds a blue coloration is produced in case nitrates are present. If a large quantity of the nitrate is present the coloration forms immediately. The diphenylamine test solution may be prepared after Withers & Gray's formula,[9] which is as follows:—0.7 gram of diphenylamine is dissolved in 60 cc. concentrated sulphuric acid and 28.8 cc. of distilled water. The mixture is thoroughly cooled and 11.3 cc. concentrated hydrochloric acid are added slowly.

The papers of only four brands out of twenty-eight tested, responded to this test for nitrates.

In closing, I wish to acknowledge the helpful suggestions of Prof. John U. Lloyd while experimenting with Lloyd's Reagent; also to those who kindly and promptly replied to my letters when seeking information on certain points and to the manufacturers in furnishing data in reference to cigarette papers.

ESTIMATION OF CALOMEL.

R. I. GRANTHAM:

The iodometric method for the estimation of calomel is the most expeditious and convenient one. This method, however, cannot be applied generally, especially in the analysis of calomel tablets or similar preparations which contain in addition to the mercury salt various other ingredients. In order to find a reliable method for estimating the calomel in such products the following methods were tried by which reliable results were obtained:—

METHOD I.

0.3 gm. of calomel or an amount of the powdered tablets equivalent to 0.3 gm. of calomel is transferred to a 6 ounce glass stoppered bottle. Any alkali present

[9] J. Am. Chem. Soc. (1911), Vol. 33, 708.

is neutralized with acetic acid and about 5 cc. of chloroform, 20 cc. of N/10 iodine solution and 5 cc. of potassium iodide solution (1:1) are added. The mixture is shaken occasionally for 15 minutes and the excess of iodine is then titrated with N/10 sodium thiosulphate solution. Each cc. of N/10 iodine solution corresponds to 0.0236 gm. or 0.364 grains of calomel.

METHOD II.

0.2 gm. of calomel or a corresponding amount of the powdered tablets is transferred to a 4 ounce Erlenmeyer flask, mixed with 0.5 gm. of potassium chlorate and 15 to 20 cc. of 10 *per cent.* hydrochloric acid. The mixture is digested on a steam-bath for 15 minutes and is then filtered into an 8 ounce glass stoppered bottle. The solution is neutralized with caustic alkali and a sufficient quantity of the alkali is then added to obtain an excess equivalent to about 20 cc. of normal caustic alkali. After the addition of 3 cc. of formaldehyde solution (37 *per cent.*), the mixture is shaken well and is then allowed to stand for 15 minutes. It is then made acid with acetic acid and the metallic mercury which is formed estimated iodometrically as given in Method I. Each cc. of the N/10 iodine solution corresponds to 0.0118 gm. or 0.182 grains of calomel.

METHOD III.

0.3 gm. of calomel or an equivalent amount of the powdered tablets is treated with potassium chlorate and hydrochloric acid as just given. The mixture is filtered into a large beaker, the filter washed well with water and the filtrate is made alkaline with ammonia water. After the addition of a large excess of acetic acid and one to three grams of sodium or potassium oxalate to the filtrate, the mixture is boiled, stirring constantly in order to prevent bumping. After allowing the mixture to settle, it is filtered. The precipitate is washed three times with hot water by decantation, is transferred to a filter and is washed with hot water until free from chlorides, using for this purpose about 150 cc. of water in all. The filtrate and wash-water are then heated to about 80° and the mercury is precipitated with hydrogen sulphide gas and estimated as mercury sulphide in the usual way.

Although Method I, originated by Hempel, is a very expeditious and reliable one it cannot be applied as already pointed out in every case. It is essential that chloroform and acetic acid be used, as I have found that in the absence of chloroform, when tablets are made with mineral oil as a lubricant, the mercury globules are covered with a thin coating of the oil and the iodine solution is thus prevented from acting on the mercury. If such is the case the results naturally will be low. The acetic acid is used in order to dissolve any alkaline salts present.

Method II is devised as a check of Method I, and although it is somewhat more complicated it may be considered as giving more accurate results for general use. Most of the foreign matter present is oxidized by the chlorine liberated from the potassium chlorate by the hydrochloric acid.

In this process the calomel is converted into mercuric chloride, the latter reduced by the formaldehyde to metallic mercury, which in turn is converted by the iodine solution into mercuric iodide. From the amount of iodine solution used for this purpose, found by titrating back the excess of iodine solution, the amount of calomel can easily be estimated.

The third method is well adapted for examining tablets which contain coloring matter, or pills which contain resins, gums and similar substances. The sodium or potassium oxalate is added to eliminate the hypochlorite which is formed during the reaction and which would cause a precipitation of sulphur when conducting the hydrogen sulphide into the solution obtained. Naturally all insoluble matter should be eliminated by filtration before the mercury is precipitated by the hydrogen sulphide. Calcium phosphate which is frequently applied as a diluent in making tablets of this kind is also precipitated as oxalate.

These methods were applied to mixtures of various composition, and also to various kinds of tablets. The mixtures were the following, the amount of ingredients being expressed in grams. The following results were obtained:—

	Mixture No. 1	Mixture No. 2	Mixture No. 3	Mixture No. 4
Calomel	5 gms.	5 gms.	5 gms.	2.5 gms.
Sod. Bicarb.	5 gms.	10 gms.	25 gms.	2.5 gms.
Starch	1 gm.	2 gms.	5 gms.	5 gms.
Talcum	1 gm.	2 gms.	5 gms.	5 gms.
Glycolene	0.5 gm.	1 gm.	2 gms.	2 gms.
Prec. Calc. Phos. q. s. ad.	25	50	100	100
Calomel in Mixtures	20%	10%	5%	2.5%

	Mixture No. 5	Mixture No. 6
Calomel	2.5 gms.	2.5 gms.
Milk Sugar q. s. ad.	50 gms.	10 gms.
Calomel in Mixtures	5%	25%

	1	2	3	4	5	6
Method I.	99.1%	98.0%	100 %	96 %	99.5%	99.1%
Method II.	99.8%	100 %	100.9%	96.7%	99.8%	99.2%
Method III.	98.3%	99.6%	97.2%	95.1%	100.1%	100 %

Three kinds of tablets were examined and the results obtained by the three methods represent the following amount of the theoretical amount present:—

Tablets Method I.	90 %	94 %	106%
Method II.	97.3%	100.1%	98%
Method III.	98.2%	101 %	99%

Analytical Laboratory of Sharp & Dohme, July, 1914.

SOME FACTORS IN DRUG ABSORPTION IN FROGS.

W. F. BAKER, M. S., M. D.

Among the objections that have been urged against the frog-heart assay method for the digitalis bodies, the principal ones are the factor of absorption and the time-limit. Of these, the factor of absorption is undoubtedly the more important, the time-limit being dependent upon the rate of absorption.

The manner in which various fluids are absorbed from the lymph sac or the absorption prevented, has not been determined. Experiments and experience have demonstrated, however, that the majority of healthy frogs will absorb from the ventral lymph sac, in a period of one hour, a quantity of fluid equal to about 0.015 cc. per gram of body weight.

Focke has demonstrated that enough of the digitalis bodies may be absorbed in five to twenty minutes to produce the characteristic digitalis heart and has taken twenty minutes as the time-limit for his method. Magnus, using another method, has extended the time to one-half hour, Famulener and Lyons to one hour, and

Houghton to twelve hours. Not infrequently, when assaying preparations by the one-hour method and by the twenty-four method, I have found that out of a series of ten apparently healthy frogs, in not more than one or two frogs would the absorption be complete. At another time, using the same preparation or solution and frogs of the same lot, and under apparently the same conditions, absorption would be complete in every instance. If this non-absorption was but rarely observed, the cause might be attributed to that ever-ready idiosyncrasy. Occurring as it does at times in nearly every member of a series, it appears to be more than an individual peculiarity, and becomes a factor of great importance in this assay method.

While poor absorption may be met with during any time of the year, it is especially likely to occur during the Spring and late Fall. Certain preparations are very prone to meet with poor absorption, as German digitalin, digitoxin and preparations containing acetic acid or glycerin.

In a series of experiments with strychnine and ouabain, frogs placed in these solutions quickly (3 to 15 minutes) absorbed enough of the drug through the skin to produce the typical poisoning. The same results were secured after pithing (brain only for strychnine—brain and cord for ouabain). In another series, in which the solutions were injected into the lymph sac after pithing, complete absorption had taken place within 60 minutes in some frogs, while with others there had been but little absorption. In another series of experiments, a flap was made from the skin of the abdomen, and the drug painted on the under surface of the flap, that is, the lining of the lymph sac, and in others painted on the surface of the abdominal muscles, care being taken to prevent the solution touching the skin. Typical poisoning was produced in all cases except with ouabain on the inner surface of the flap, when in only two instances was the ouabain action observed in a series of twelve experiments. In still another series after pithing, the skin was removed from the hind legs and the frog suspended so that these were in solutions of strychnine or ouabain. The typical poisonings were produced. This did not occur with strychnine if a ligature was previously placed around the base of the heart.

From these experiments it would appear that absorption, of these two drugs at least, may take place from the outer or inner surface of the skin or from the surface of the muscles. The mechanism of absorption or prevention of absorption is not under control of the central nervous system.

Frogs kept in the light appear to absorb better than those kept in the dark. Absorption occurs more readily at higher temperatures, although at a temperature of 30° C., for one hour absorption is not always complete.

It was suggested that perhaps the manner in which the frogs were kept might have something to do with the absorption. Several series of experiments were made upon lots of frogs of testing them as soon as they arrived and again after they had been kept for some weeks under uniform conditions. The main points brought out by this work were, that different lots of frogs varied in their susceptibility to ouabain and digitalis when first received, and some lots absorbed more readily than others.

To determine if the amount of moisture present in the frog influenced absorption, frogs were kept in dry cases until they had lost 10, 25 and 50 *per cent.* of

their weights and then solutions were injected into the lymph sacs. It was found that these frogs absorbed even less readily than the controls kept in wet cages.

In another series of experiments it was found that .9 *per cent.* salt solution was more readily absorbed than distilled water, and 25 *per cent.* alcohol more readily than the salt solution. 50, 75 and 95 *per cent.* alcohol is fairly well absorbed, but not so readily as the 25 *per cent.*

Frogs which are plainly diseased (red-leg disease) may absorb quite readily, while others which, to all appearances are quite healthy, may not absorb at all. In two instances of this kind, I obtained roughly 25 *per cent.* more fluid from the ventrol lymph sac than I had injected. I believe, however, that the matter of absorption is largely due to the health of the frogs and the condition under which they are kept, and if proper attention is paid to the handling, cleansing and storing of the frogs, but little difficulty will be experienced with poor absorption. If, when assaying, all frogs are discarded which contain an excess of fluid in the lymph sac one hour after being injected, quite uniform and reliable results are obtained by the one-hour frog-heart method.

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STILLINGIA SYLVATICA.

E. R. MILLER, R. I. BROOKS AND C. P. RUTLEDGE.

The root of *Stillingia sylvatica* has been a popular remedy in the Southern States for more than a century. It was first introduced to the medical profession by Thomas Young Simons, in an article published in 1828, in the American Medical Recorder.

In 1846, Dr. H. B. Frost[1] published a paper on Stillingia in which he considered it "not very far inferior to mercury in its action upon the capillary and secreting vessels in changing their morbid states or conditions."

In 1850, the root of *Stillingia sylvatica* was introduced into the United States Pharmacopœia and has occupied the position of an official remedy ever since.

Concerning the value of the drug there is very great divergence of opinion, but it is still largely used in domestic practice, chiefly as an alterative, and by the medical profession, especially in the form of certain proprietary remedies of which it forms an ingredient. Notwithstanding its long use, however, there is very little known concerning the chemistry of the plant, the pronounced acridity of the drug being attributed to a volatile oil, a fixed oil and a resin called sylvacrol.

The Volatile Oil:—The term "oil of stillingia" has been applied to two products of very different character, meaning on the one hand a preparation obtained from the root by steam-distillation and on the other an alcoholic or ethereal extract of the same. To add to this confusion there are contradictory reports concerning the presence of volatile oil in the root. Thus, W. Saunders[2] extracted five pounds

1. Am. Jour. Pharm., 20, 306.
2. Proc. A. Ph. A., 1868, 460; Am. Jour. Pharm., 41 (1869) 149.

of the dried root with alcohol and obtained five and a quarter ounces of an extremely thick oil. J. H. Harmanson[3] distilled the root with water and obtained an opalescent distillate, but no volatile oil. On the other hand, W. Bichy[4] distilled 100 gm. of the powdered drug and was able to separate from the distillate 3.25 gm. of a yellowish oil lighter than water. This latter result is widely quoted in text-books and works of reference.

With the object of obtaining a quantity of the volatile oil for a chemical investigation, we collected about 150 pounds of the fresh root and after a few weeks subjected it, in a coarsely comminuted condition, to steam distillation. The distillate was acid to litmus and possessed a rather disagreeable odor, but, much to our surprise, only a few drops of a slightly yellowish oil, lighter than water and of disagreeable odor, could be separated from the distillate. A large part of the distillate was neutralized with sodium bicarbonate and shaken out with ether. After removal of the ether only a small residue was obtained. The distillate which had been neutralized and extracted with ether was evaporated on the water bath to a small volume, slightly acidified with sulphuric acid and distilled with steam, but the amount of acid obtained was too small to be examined further. Just what influence the time of collection, method of drying and age of the drug may have on the yield of volatile oil we are unable to say, but we are inclined to doubt the possibility of obtaining ¾% of volatile oil from unadulterated stillingia root under any circumstances.

The Alkaloid:—Bichy's analysis of the root seemed to show, in addition to the ordinary constituents of plants, the presence of an alkaloid (stillingine). E. G. Eberhard[1] made a chemical examination of stillingia root in 1891, and concluded that no alkaloid is present. In his examination the drug was extracted in three different ways, one of which was a repetition of Bichy's process, but in the final test for alkaloids he applied, in two cases, only Mayer's reagent and in the other Mayer's reagent and picric acid. Since Mayer's reagent does not form a precipitate with all known alkaloids, and picric acid may fail to give a precipitate with alkaloids in weak solution, Eberhardt's experiments may be considered as not conclusive.

In order to obtain further knowledge on this question we carried out the following experiments:—

1. 220 gm. of the fresh root, finely comminuted, were extracted by maceration with hot water acidulated with acetic acid. The liquids obtained by straining and expressing were united, filtered and evaporated by gentle heat to a semi-solid mass. This was extracted with alcohol, filtered, the alcohol evaporated off and the residue concentrated to a small volume. This was mixed with 200 cc. of distilled water, filtered, made alkaline with ammonia, extracted with ether and the ethereal solution shaken with a small amount of distilled water acidulated with H_2SO_4. This solution gave characteristic precipitates with the following alkaloidal reagents:

Wagner's reagent, Dragendorff's reagent, Scheibler's reagent and tannic acid.

3. Am. Jour. Pharm., 54 (1882) 387.
4. *Idem* 57 (1885) 529-531.
(1) Lilly's Bull. No. 17, November, 1891

2. 150 gm. of fresh root were extracted with hot water acidulated with acetic acid. The total liquid obtained by straining and expressing was concentrated to about 40 cc., made slightly alkaline with KOH and distilled, the distillate being received in a small amount of water acidulated with H_2SO_4. The distillate was evaporated on a water bath to about 5 cc. and then tested with the following results:—

Wagner's reagent gave a reddish yellow ppt.; Dragendorff's reagent gave a yellowish brown ppt.; Scheibler's reagent gave a very abundant white ppt.; Picric acid gave a lustrous yellow crystalline ppt.; Tannic acid gave a yellowish white ppt.; Platinum chloride gave a yellow ppt.

3. 250 gm. of the fresh root were cut into very fine pieces and extracted by maceration with purified 95% alcohol. The alcoholic solution was slightly acidulated with HCl and the alcohol distilled off on a water bath and the residue concentrated by moderate heat to a small volume. This was mixed with 25 cc. of distilled water, filtered, the filtrate made slightly alkaline with KOH and shaken out with ether, the ethereal solution evaporated to small volume and then shaken with 5 cc. of distilled water acidulated with H_2SO_4. This solution gave characteristic precipitates with Wagner's, Dragendorff's, and Scheibler's reagents.

Following the extraction with ether, chloroform was used and an aqueous acid solution prepared in the same way. The above-named reagents gave precipitates with this solution, also, but in smaller amounts.

4. About nine kilos of the fresh root were subjected to pressure, yielding a juice which was free from acridity, but had a slightly sweet taste and a disagreeable nauseating odor. This juice was allowed to evaporate to dryness spontaneously. The residue was extracted with 95% alcohol, filtered, the alcohol evaporated off and the residue reduced to a small volume on a water bath. On the addition of water an oily layer separated. This had a disagreeable odor and was soluble in alcohol, ether and chloroform. The mixture was shaken up with ether, then made alkaline with KOH and again extracted with ether. The two ethereal solutions were concentrated and separately shaken with a small amount of water acidulated with H_2SO_4. With the usual alkaloidal reagents these solutions gave only very slight reactions.

5. About eleven kilos of the fresh root were extracted by the method given in experiment No. 2. From the ethereal solution obtained from this extract, after the addition of two or three drops of HCl, the greater part of the ether was removed by distillation and the remainder allowed to evaporate spontaneously. A brown residue was obtained. This was treated with acidulated water, filtered and tested with alkaloidal reagents. Each of the following gave a decided precipitate:—

Compound solution of iodine, Pot. bismuth iodide, Pot. mercuric iodide, Pot. cadmium iodide, Phospho-tungstic acid, Picric acid, Tannic acid, Phosphomolybdic acid, Mercuric chloride, Platinic chloride.

The remainder of the liquid which gave the above-named tests was made alkaline with NaOH and shaken out with ether. When a drop of concentrated HCl was added to this ethereal solution a yellow precipitate was formed. This was filtered out and found to be soluble in water. The ether solution was allowed to

evaporate spontaneously, the residue mixed with a few cc. of water, filtered, acidulated with HCl and this solution tested with the same reagents. Very heavy precipitates were obtained in all cases.

The total quantity of acidulated aqueous solution was then treated with potassium bismuth iodide. A very heavy deep red precipitate was obtained. This was filtered out, washed with distilled water, mixed with distilled water, acidulated with HCl and H_2S passed through the mixture, the bismuth sulphide filtered off, the filtrate made alkaline with KOH and shaken out with ether and the ether allowed to evaporate spontaneously, leaving a yellow amorphous residue.

Some of this residue, dissolved in water and acidulated gave precipitates with all the reagents named above.

The amount of this residue was not sufficient for further examination.

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CANNABIS SATIVA:

IS THE MEDICINAL VALUE FOUND ONLY IN THE INDIAN GROWN DRUG?

H. C. HAMILTON, M. S.

Not many students of the subject will to-day answer this question in the affirmative. There is too much evidence to the contrary. Some, however, have not yet been brought to the point of accepting as "Standard," an extract of Cannabis Sativa irrespective of the locality from which the crude drug was obtained if the fact is noted that it is not of Indian origin. For this undoubtedly, tradition is largely responsible. Originally only three or four provinces[1] on the west coast of India were included in the territory from which official, medicinally active hemp could be obtained. Later,[2] however, no limit was placed on the drug specifications except that it be from India; and as no distinguishing feature is present to assure its origin as being Indian, no doubt much material appears on the market from other sources and is accepted as "Indian."

This statement might be accepted as the cause for the uncertain action of the drug noted by many observers. What seems much more likely to be the reason for the inconstant and inconsistent results reported by some observers, is that the variable effects, both clinical and pharmacological, which are obtainable even with active material had not, at that time, been sufficiently recognized. Houghton[3].

While the dog is generally accepted as the most satisfactory test animal,[1, 4 & 5] not every one is applicable for the purpose. Many of them must be rejected as not being sufficiently susceptible and even the susceptible ones are not uniformly so.

This being true, unless exceptional care is exercised in observing the pharmacological action of the drug extract, misleading reports are certain to follow.

It is not the intention of the writer at this time, to adduce data to prove the activity of American grown Cannabis Sativa, because it is possible to prove almost anything one wants to prove about the activity or inactivity of extracts of

hemp. The intention is rather to point out the possible reasons for such contradictory reports as have been published. These, on the other hand, are the result of incomplete or inaccurate observation, non-susceptibility of the test animal or patient, use of an extract whose activity had been destroyed or the use of extracts from inert or only slightly active drugs. On the other hand, not infrequently a patient or a test animal is highly susceptible and a particular sample of only average quality is reputed to possess exceptional activity. Many statements regarding the activity of hemp extracts are apparently colored by tradition, it being concluded without further comment that only the Indian grown drug contains the narcotic principle. Cushny[6] states that Cannabis Sativa is of pharmacological interest only when grown in warm climates including Southern United States. Kobert[7] claims that the official preparations have no action on animals and that their action on humans is inconstant. Fraenkel[1] says: "The action of haschish differs greatly according to climate, race and individuality." Bibra's book[8] contains very interesting descriptions of experiments with haschish on humans which proved its strongly differing action on the individual. Sollmann[9] says: "Hemp grown in western countries is generally devoid of Cannabinol and is inactive." Wood, (Geo. B.)[10] noted that the European hemp appeared to have none of the exudate typical of the Indian grown drug and of that growing in the vicinity of Philadelphia. If this last statement is true, it is a logical explanation of European opinion that only the drug from India contains appreciable activity. It is probably true only in exceptional cases. Wood (H. C.)[10] found that less than 1 gr. of an alcoholic extract of Kentucky grown hemp was effective on himself. This would apparently indicate exceptional activity since 1 gram of Ext. Cannabis Indica will not ordinarily produce so intense an action as that described. Actually, it would seem probable that he is occasionally, or generally, more susceptible than the average person.

The most recent reference of note is that by Eckler & Miller[5] in which several series of experiments were carried out, all leading to the conclusion "that if American Cannabis is made official, difficulty will generally be experienced in obtaining highly active lots which will compare favorably with a good Indian drug." One statement in their summary is that "very little dependence can be placed on the estimation of the extractive matter yielded to alcohol." This, in the writer's experience, is too general a statement. The Extract is rarely inactive. When an Extract is entirely soluble in cold 95% ethyl alcohol, the yield is a fair indication of the activity of the drug[11]. There are exceptions to this statement, however, so that it cannot be taken as true in any particular case without being verified by pharmacological assay but it may be taken as roughly indicating the value, other things being equal.

The Powdered Extract Cannabis Sativa, from whatever source the drug originated, very readily deteriorates. In fact, one lot came under the writer's observation in which no activity could be detected, while the extract from which it was made was of full standard activity, i. e., 10 mg. per kilo administered to a susceptible dog elicited the in-coördination characteristic of the drug's action.[11] Undoubtedly, a similar deterioration may take place in the drug or in an extract without any recognizable change in its physical properties.

Exception may also be taken to the experiments of Eckler and Miller on account of the quality of the drug used. In no case was the quality of the crude drug, at all comparable to the quality of the Indian Cannabis with which its activity was compared. A sample of crude drug containing a large proportion of seeds, stems, and leaves, this being the description applying to most of the samples they tested, is very different from the average quality of Indian drug imported, and one should not expect equality either in yield or activity. Much better drug should be and is available on the market.

The writer[11] has carried out tests for the activity of samples of drug grown personally from seed collected from Indian drug, and invariably found no activity in either the stems or seed. The leaves, however, when gathered before any brown color due to decay was evident, were found to contain almost as much extractive with almost the same activity as the imported drug which meets U. S. P. requirements, while the flowering tops of the pistillate plant—the part corresponding exactly to the requirements for Indian Cannabis—were found fully equal and in some cases superior to the average good quality imported drug meeting U. S. P. requirements. This and other equally favorable results, were reported in former papers.

There are occasional samples of American drug decidedly less active than standard both as regards yield of extract and its activity. These, however, can be paralleled by samples of Indian drug having no greater activity.

With the exercise of caution in selecting the drug and insistence on certain qualities essential to drug of good quality, American producers can supply material practically of equal value to that imported. It will be necessary, however, for manufacturers of extracts of this drug to recognize the economic difficulties that stand in the way of duplicating the physical qualities of the imported drug. Hand-picking is out of the question and almost of necessity the commercial drug will contain leaves, stems and seeds with some admixture of the male plant.

To obviate the difficulty of so specifying as to exclude undesirable parts, it seems advisable to specify merely as regards yield and activity of extract from the botanically correct drug. Then, no sample of hemp plant that can be economically extracted and that yields an active extract, need be rejected because of physical difference from rigid U. S. P. specifications. If the extract is active and if the yield and the cost of the drug are compensatory we then have an economic condition that should be satisfactory.

Also as Scoville[12] has pointed out, the crude drug is not used as such and really requires no specifications except botanical.

Another question has been raised relative to the comparability of therapeutic and pharmacologic activity. This point was raised by Dr. Rusby and was answered in a paper presented before this section two years ago.[13] Experiments indicated that the dog, under rigidly prescribed conditions, is a satisfactory test animal and that lack of therapeutic results from pharmacologically active samples may safely be ascribed to individual variability. Schroof,[14] moreover, has pointed out that non-susceptibility is not absolute but is merely a question of quantity.

We conclude, therefore, that, first, American hemp contains the active constituent; second, if equal care is exercised in selecting the proper part of the drug for extraction, no material difference in activity will be found between extracts of Indian and American hemp; third, apparent lack of activity and variability in

activity applies equally to both varieties of this drug; fourth, under proper direction there is no valid reason why American hemp cannot be collected to advantage to replace the imported article.

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ESTIMATION OF YELLOW PHOSPHORUS.

H. ENGELHARDT AND O. E. WINTERS.

At the Nashville meeting of the American Pharmaceutical Association we presented a paper on the estimation of Yellow Phosphorus. This paper was offered by us only as a preliminary one. Since then we have made numerous experiments in regard to the estimation of the metalloid and on the strength of these are now compelled in some instances to offer slightly modified methods. Since the paper did not appear in the Journal of the American Pharmaceutical Association up to May, 1914, we requested that the paper be not published prior to the meeting of the Association at Detroit when we would be in a position to give more details of the various methods applied by us in addition to a number of results obtained with pharmaceutic products of various kinds.

For the estimation of phosphorus several methods have been published. The distillation process for estimating phosphorus originated by Mitcherlich and later on modified by Dusart and Blondlot can be applied only when comparatively small quantities of phosphorus are present because the metalloid is not as volatile with steam as is generally accepted. It requires hours to distill as little as 50 mgms. of phosphorus. Neither the oxidation of the phosphorus in the distillate with nitric acid or bromine as carried out in Mitcherlich's method, nor the conversion of the phosphorus into silver phosphide and subsequent oxidation of the latter to phosphoric acid yield satisfactory results.

Various processes depending on the oxidation of phosphorus with nitric acid and simultaneously destroying any organic matter present, by this acid, by concentrated sulphuric acid or other chemicals were therefore recommended by Sayda,[1] Fry,[2] Vanderkleed and Turner,[3] Woerner[4] and others. These processes, however, have the disadvantage in that by them the total and not the elementary phosphorus alone is determined.

Reed[5] determined the phosphorus by allowing a solution of bromine in acetone,

1 Pharm. Zeitschr. f. Russl. XXXVI, 337.
2 Pharm. Post, 1910, 969.
3 Proc. A. Ph. A., 1906, 395.
4 Pharm. Zeit., 1908, 398.
5 Analyst XXIV, 23.

previously standardized against phosphorus, to act on the phosphorus solution, until a faint but persistent yellow color was produced.

Most of the methods for estimating phosphorus depend on the property of phosphorus of forming insoluble phosphides with some of the heavy metals, especially silver and copper, which can easily be oxidized to phosphorous and phosphoric acid respectively.

The methods originated by Tothe,[6] Louise,[7] Stich,[8] Fränkel,[9] and Illes[10] depend on the conversion of a solution of the phosphorus in a convenient solvent (in most cases acetone) into silver phosphide and estimating the latter as such or by oxidation into phosphoric acid.

The property of the copper salts to convert phosphorus into non-poisonous phosphide and finally into phosphoric acid has been known for years, and copper salts therefore have been used with advantage as an antidote in cases of phosphorus poisoning. The first one to use copper salts for estimating phosphorus was Straub[11] whose method was later modified by Katz,[12] who recommends using copper nitrate instead of copper sulphate for converting the phosphorus into phosphide, by Christimanos[13], Korte[14], Tauchert[15] and others. All these investigators found that by the action of copper sulphate on phosphorus, phosphoric acid, sulphuric acid, copper phosphide and metallic copper are formed though they were not able to establish a definite equation for this reaction.

Finally Enell's method must be mentioned. This process which is exceptionally suitable for the estimation of phosphorus in phosphoretted oil depends on the oxidation of phosphorus by standardized iodine solution, titrating back the excess of the latter with thiosulphate solution then estimating alkalimetrically the amount of phosphoric acid formed by the oxidation and deducting from this the amount of acid originally present in the oil.

For estimating the phosphorus in commercial yellow phosphorus and in galenical preparations we have applied both Louise's silver method as modified by Fränkel and Straub's copper method with Katz's modification.

Yellow Phosphorus:—The phosphorus was carefully deprived of any oxidation products by scraping, then dried in an atmosphere of carbonic acid and weighed. It was then dissolved in chloroform free from air and the solution was made up with chloroform to a certain volume.

10 cc. of the solution corresponding to .03656 gm. of phosphorus was mixed in a bottle with 15 cc. of 10 *per cent.* copper nitrate solution from which the air previously had been expelled by heating. The air in the bottle was replaced by carbonic acid gas and the mixture shaken for about one-quarter hour. Hydrogen peroxide was then added and the mixture shaken again until the black color of the copper phosphide had disappeared. The aqueous solution was separated from the

[6] Chem. Zeit., 1893, 1211.
[7] Compt. rend., 1899, 391.
[8] Chem. Zeit. Rep., 1901.
[9] Pharm. Post, 1901, 117.
[10] Wien. med. Pract., 1901, No. 2.
[11] Archiv der Pharm., 1903, 5, 535.
[12] Apoth. Zeit., 1903, 683.
[13] Zeitschr. anorg. Chem., 1904, 303.
[14] Inaugural Dissertation, Berne, 1906.
[15] Zeitschr. anorg. Chem., 1912, 350.

chloroformic solution, the latter washed out twice with about 15 cc. of water and the combined aqueous solutions and wash-waters after the addition of nitric acid were evaporated to about 5 cc. testing from time to time for unoxidized phosphorous acid. When oxidation was complete the phosphoric acid was estimated in the aqueous liquid as magnesium pyrophosphate. Should any copper salt separate together with the ammonium magnesium phosphate, the latter is re-dissolved and re-precipitated.

In this way we obtained magnesium pyrophosphate corresponding to 101.5 *per cent.* of the phosphorus taken for the estimation. In order to find out whether the phosphorus contained any appreciable amount of oxidation products, the chloroformic solution of the phosphorus was shaken out with various quantities of carbonated water but the amount of magnesium pyrophosphate obtained from the aqueous solution and calculated for phosphorus, showed the phosphorus to have a purity of 99.2 *per cent.* In other words, only traces of oxidation products were present in the phosphorus used for this test.

In another series of experiments 15 cc. of a solution of phosphorus in chloroform containing .1064 gm. of phosphorus were treated in the same way, and the results obtained, calculated for phosphorus, were 100.5, 98.7, 99.8 and 100.0 *per cent.*

When substituting the copper nitrate by silver nitrate and filtering the silver phosphide, we obtained in the first experiments magnesium pyrophosphate corresponding to only 78.6, 77.1, 81.6 and 82.4 *per cent.* of the amount of phosphorus used. This amount was not materially decreased by previously washing the chloroformic solution with water. The results were 78.6, 80.9 and 79 *per cent.* The estimation was carried out by mixing the chloroformic phosphorus solution in a bottle filled with carbonic acid gas with about 10 cc. of a 50 *per cent.* silver nitrate solution, shaking the mixture for about one-half hour, and, after allowing to settle, collecting the silver phosphide in a Gooch crucible. The silver phosphide was then oxidized with 25 *per cent.* nitric acid and in the resulting solution the silver was removed by hydrochloric acid. The mixture was filtered again, the filtrate evaporated to dryness, the residue taken up in water and the phosphoric acid precipitated in the regular way.

The discrepancies in the results obtained by the copper nitrate method and the silver nitrate method were probably due to the fact that on adding to a solution of phosphorus in chloroform, silver nitrate or copper nitrate, some oxidation products of nitrogen are formed in addition to the respective phosphides, which in turn dissolve any metallic phosphide formed or inhibit the formation of the phosphide to some extent.*

In order to prove this, 15 cc. of the chloroformic phosphorus solution, containing .1064 gm. of phosphorus, were treated in an atmosphere of carbonic acid gas with copper nitrate, the mixture was shaken for one-half hour and after settling, the copper phosphide was collected in a Gooch crucible. It was oxidized with hydrogen peroxide solution with the addition of traces of nitric acid, and the solution was evaporated to dryness on a water-bath after the addition of more

* According to Bird and Diggs (Journ. Amer. Chem. Soc., 1914, page 1383), nitric acid is formed when converting the phosphorus into phosphides with copper nitrate or silver nitrate. They also found that nitric acid even when very diluted acts on the phosphorus.

nitric acid in order to convert all the lower oxidation products of phosphorus into phosphoric acid. The residue was then taken up with water and the phosphoric acid estimated in the usual way. By this method we obtained .224, .231 gm. of magnesium pyrophosphate. The filtrate from the copper phosphide was oxidized in the regular way by evaporation in the presence of nitric acid, the residue taken up in water and the phosphoric acid determined as magnesium pyrophosphate: .161, and .153 gm. of magnesium pyrophosphate were obtained. The combined magnesium pyrophosphate obtained from the precipitate and the filtrate therefore was .385 and .384 gm. respectively, corresponding to 100.7 and 100.6 *per cent.* of phosphorus. In another experiment 15 cc. of the phosphorus solution were treated with silver nitrate solution, the silver phosphide was collected in a Gooch crucible, oxidized with nitric acid, etc. The following results were obtained: .307, .303, .305, .308 gm. of magnesium pyrophosphate. In the filtrate .065, .064, .069, .064 gm. of magnesium pyrophosphate was found. This gives a total .372, .371, .374, .372 gm. respectively of magnesium pyrophosphate, corresponding to 97.9, 97.6, 98.1, 97.6 *per cent,* of phosphorus.

These experiments show that the phosphorus cannot be estimated by collecting the copper phosphide or silver phosphide on a filter, because in the reaction some substances are formed which dissolve a part of the phosphide already formed or convert the phosphorus into oxidation products which naturally do not form phosphides.

For the estimation of phosphorus in a solution in chloroform or any other suitable solvent, the copper nitrate method therefore is to be preferred, because the mixture of copper phosphide, copper nitrate, water, chloroform, etc., can be treated directly with hydrogen peroxide solution, while in the silver nitrate method the silver phosphide cannot be well oxidized with nitric acid in the presence of chloroform. In the silver method the silver phosphide is preferably collected in a Gooch crucible and in the filtrate the oxidation products are to be estimated separately thus involving two manipulations instead of one as in the copper method. In our previous paper we expressed the opinion that copper phosphide is more stable than silver phosphide. This, however, is not the case as has developed in the course of later experiments.

Phosphorus Resin:—In our previous paper we reported that for estimating the phosphorus in phosphorus resin we applied the following methods to a sample which was several years old and reputed to have contained originally 10 *per cent* of phosphorus. About 4 gms. of the resin (accurately weighed) were dissolved in 50 cc. of air-free chloroform in a separator, 20 cc. of air-free water were added, the air in the separator replaced by carbonic acid gas and the mixtures shaken for one-quarter hour. An aliquot part of the chloroformic solution was then drawn off and treated with copper nitrate solution as given above. The resin was found to contain 7.33 and 7.45 *per cent* respectively of phosphorus, thus showing that about 25 *per cent* of the latter had been lost either by volatilization or oxidation.

Since then we have made quite a number of experiments in regard to estimating the phosphorus in phosphorus resin, especially for the purpose of finding out whether or not the ammonium magnesium phosphate is free from magnesium

abietate and also to what extent phosphoric acid is formed when treating the copper phosphide with hydrogen peroxide solution only.

The resin used for these experiments was dried over sulphuric acid in an atmosphere of carbonic acid gas for one week. One gramme was dissolved in 50 cc. of air-free chloroform, the solution was shaken out with various small portions of water in order to remove any oxidation products, and was then shaken well for one-half hour with 10 cc. of a 10 *per cent* copper nitrate solution. After the addition of an excess of hydrogen peroxide solution the mixture was shaken again until the copper phosphide had been oxidized, i. e., until the black color of the latter had disappeared. The aqueous solution was then separated in the usual way, mixed with nitric acid and evaporated to dryness. The residue was taken up in water with the addition of hydrochloric acid and the phosphoric acid precipitated with magnesia mixture.

By this process the following results were obtained:—

.224 gm. of $Mg_2P_2O_7$=6.25 *per cent.* of phosphorus
.219 gm. of $Mg_2P_2O_7$=6.13 *per cent.* of phosphorus
.224 gm. of $Mg_2P_2O_7$=6.25 *per cent.* of phosphorus
.225 gm. of $Mg_2P_2O_7$=6.26 *per cent.* of phosphorus

In the next series of experiments the copper phosphide was treated in the same way, the phosphoric acid precipitated with ammonium molybdate solution, the ammonium phospho-molybdate dissolved in ammonia water and the phosphoric acid again precipitated with magnesia mixture. We then obtained:—

0.225 gm. of $Mg_2P_2O_7$=6.26 *per cent.* of phosphorus
0.220 gm. of $Mg_2P_2O_7$=6.15 *per cent.* of phosphorus

In still another series of experiments, the phosphoric acid obtained by oxidizing the copper phosphide and further oxidizing the resulting solution with nitric acid was precipitated with magnesia mixture, the ammonium magnesium phosphate was dissolved in hydrochloric acid, and this solution was shaken out with ether to remove any abietic acid. The phosphoric acid was then precipitated with magnesia mixture. This yielded:—

.227 gm. of $Mg_2P_2O_7$=6.34 *per cent.* of phosphorus
.224 gm. of $Mg_2P_2O_7$=6.25 *per cent.* of phosphorus

These results clearly show that in precipitating the aqueous solution with magnesia mixture no magnesium abietate is carried down with the ammonium magnesium phosphate.

That by oxidizing the copper phosphide with hydrogen peroxide solution alone, only a part of the phosphorus is oxidized to phosphoric acid is shown by the following experiment:—

One gramme of the above resin was treated as given before and the aqueous solution obtained after decomposing the copper phosphide with hydrogen peroxide solution was precipitated with magnesia mixture.

.140 gm. of $Mg_2P_2O_7$=3.92 *per cent.* of phosphorus
.140 gm. of $Mg_2P_2O_7$=3.92 *per cent.* of phosphorus
.143 gm. of $Mg_2P_2O_7$=4.05 *per cent.* of phosphorus

were obtained, thus showing that only 50 *per cent.* of the copper phosphide had been oxidized to phosphoric acid. It is, therefore, absolutely necessary to oxidize the aqueous liquid containing the oxidation products of the phosphorus with a strong oxidizing agent, preferably nitric acid.

When applying the silver method to the resin only

.153 gm. of $Mg_2P_2O_7$=4.27 *per cent.* of yellow phosphorus
.153 gm. of $Mg_2P_2O_7$=4.27 *per cent.* of yellow phosphorus
.148 gm. of $Mg_2P_2O_7$=4.14 *per cent.* of yellow phosphorus

were obtained, or only about 65 *per cent.* of the amount obtained by the copper method. With another old resin the following figures were obtained:—

Copper method	Silver method
5.57 *per cent.*	3.88 *per cent.*
5.85 *per cent.*	3.82 *per cent.*
5.85 *per cent.*	4.02 *per cent.*

thus again showing that by the silver method only about two-thirds of the phosphorus as found by the copper method is obtained.

For estimating the oxidation products present in the resin, the following experiments were made with a preparation containing

7.33 *per cent.* of phosphorus; 7.45 *per cent.* of phosphorus

when assayed by the copper nitrate method.

4 gms. of resin were dissolved in 50 cc. of air-free chloroform and the solution was shaken out in a separator filled with carbonic acid gas with several portions of air-free water. The chloroformic solution was transferred to a 100 cc. graduated flask and the volume of the liquid was made up with air-free chloroform to the mark. In aliquot parts of the chloroformic solution the phosphorus was determined by the copper nitrate method directly, without separating the copper phosphide. The aqueous solution after expelling any dissolved carbonic acid by heating was titrated with N/10 caustic potash solution of which 51.3 cc. 50.4 cc. were required for neutralization, using phenolphthalein as indicator. This amount corresponds to 12.8 and 12.6 cc. respectively for one gramme of resin. In another series of experiments only 2 gms. of resin were used for the estimation, when 26.6 and 26.0 cc. of N/10 KOH were used, corresponding to 13.3 and 13.0 cc. for one gramme of resin. Since the alkali is used for the various oxidation products of the phosphorus, it was impossible to calculate the amount of phosphorus present as oxidation products from the amount of alkali used in the titration. The aqueous liquids were therefore evaporated after the addition of nitric acid and in the residue the phosphoric acid was estimated as magnesium pyrophosphate. Thus the following results were obtained:–

Experiment I. (4 grams.)
.281 gm. of $Mg_2P_2O_7$
.288 gm. of $Mg_2P_2O_7$
corresponding to .07024 gm. of $Mg_2P_2O_7$ in one gm. of resin or to
.072 gm. of $Mg_2P_2O_7$
1.96 *per cent.* of phosphorus
2.03 *per cent.* of phosphorus

Experiment II. (2 grams.)
.146 gm. of $Mg_2P_2O_7$
.149 gm. of $Mg_2P_2O_7$
corresponding to .073 gm. of $Mg_2P_2O_7$
.0745 gm. of $Mg_2P_2O_7$ or to
2.04 *per cent.* of phosphorus
2.065 *per cent.* of phosphorus

These experiments show that the direct copper method can be used for estimating the percentage of elementary phosphorus in phosphorus resin. They also show that it is quite easy to estimate the amount of oxidation products of phosphorus present in the preparation.

Phosphorus Paste:—For phosphorus paste such as is used for making pills the following method was applied. About one gramme of the paste, exactly weighed, was mixed in a bottle filled with carbonic acid gas, with 25 cc. of air-free chloroform and 25 cc. of air-free water and the mixture shaken for fifteen minutes. After allowing the mixture to separate, the aqueous layer was siphoned off, and the chloroform was shaken once more with 15 cc. of air-free water to remove the last traces of oxidation products of phosphorus. The water was again separated from the chloroformic solution and the latter was treated with copper nitrate and silver nitrate respectively and the estimation carried out as outlined above.

In a paste supposed to contain 7 *per cent.* of phosphorus, 6.86 and 6.7 *per cent.* were found by the copper method. By the silver method, only 5.78 and 5.86 *per cent.* of phosphorus were found. The above method applied for the estimation of phosphorus in another paste supposed to contain 10 *per cent.* of phosphorus was modified in that the aqueous solution after separating was shaken out with two portions of 25 cc. each of chloroform in order to remove any phosphorus suspended in the liquid. The combined chloroformic liquids were then treated in the regular way with copper nitrate solution. Thus 9.29 and 9.64 *per cent.* of phosphorus were obtained, by the silver method only 7.19 and 7.24 *per cent.*

Spirit of Phosphorus:—The N. F. directs that spirit of phosphorus be made by boiling 1.2 gms. of phosphorus with 1000 cc. of absolute alcohol until solution has taken place, and after cooling replacing any alcohol lost by evaporation. No requirements are given for the finished spirit, and it is probably understood that the spirit contain about 0.1 *per cent.* of phosphorus. In our previous paper we reported that we had been unable to prepare a spirit containing even approximately the amount of phosphorus required and we ascribed this shortage to oxidation of the phosphorus taking place during the boiling.

The method which we applied at that time was the following:—25 cc. of the spirit were transferred to a separator, mixed with air-free copper nitrate solution and the air in the separator replaced by carbonic acid gas. The mixture was then shaken well for a short time and allowed to stand until complete separation of the copper phosphide had taken place. The latter was collected on a filter in an atmosphere of carbonic acid gas, washed with a little air-free copper nitrate solution, decomposed by hydrogen peroxide solution preferably with the addition of a few drops of nitric acid, the solution evaporated in the presence of nitric acid to about 5 cc. and the phosphoric acid estimated as magnesium pyrophosphate. In the filtrate from the copper phosphide the oxidation products present in the spirit were estimated in the regular way. We thus obtained the following results with a spirit which was prepared by boiling phosphorus in excess with absolute alcohol for 12 hours and preserving the spirit in a bottle filled with carbonic acid gas.

Phosphorus converted into copper phosphide.	*Phosphorus present as oxidation products in filtrate from copper phosphide.*
0.068 *per cent.*	0.123 *per cent.*
0.073 *per cent.*	0.116 *per cent.*
0.0678 *per cent.*	
0.0704 *per cent.*	
0.069 *per cent.*	
0.0708 *per cent.*	

At that time we made a number of experiments by precipitating the phosphorus from the spirit in the presence of varying amounts of alcohol and water, and since

we found that the strength of the alcohol did not have any material influence on the yield of copper phosphide we concluded that the phosphorus was precipitated quantitatively as phosphide. However, we did not take into consideration the amount of phosphorus not converted into phosphide, nor the amount of phosphide redissolved by the oxidation products of nitrogen which are formed in the reaction.

Since then (see results below) we have found that in making spirit of phosphorus only about 10 *per cent.* of the phosphorus is converted into oxidation products during the boiling process. The above spirit therefore contained

0.172 *per cent.* 0.170 *per cent.*

of phosphorus instead of about 0.07 *per cent.* as reported at that time.

After numerous experiments we finally found the following method to be quite reliable for estimating the yellow phosphorus in the spirit:—

25 cc. of the spirit (prepared by boiling an excess of phosphorus with ordinary alcohol) was mixed with 50 cc. of air-free chloroform and 50 cc. of water. The mixture was shaken well and when complete separation had taken place the chloroformic solution was drawn into a flask filled with carbonic acid gas. The aqueous liquid was shaken out with two more portions of 25 cc. each of chloroform in order to remove any phosphorus suspended in the aqueous solution and the combined chloroformic liquids were then treated with copper nitrate in the usual way. The copper phosphide mixture was oxidized with H_2O_2 and the phosphoric acid estimated in the usual way. In the aqueous liquid obtained by shaking out the diluted spirit with water, the oxidation products of phosphorus were estimated. We thus obtained the following results:—

Phosphorus as such in the Spirit	Oxidation Products.
.133 gm. $Mg_2P_2O_7$=.149 *per cent.*	0.0123 *per cent.*
.137 gm. $Mg_2P_2O_7$=.153 *per cent.*	0.0121 *per cent.*

In another series of experiments the spirit diluted with water was shaken out with chloroform, the chloroformic solution was treated with copper nitrate, the copper phosphide separated by filtration in an atmosphere of carbonic acid gas and the phosphorus estimated both in the precipitate and filtrate. We obtained

Phosphorus from precipitate.	Phosphorus from filtrate.
0.071 gm. $Mg_2P_2O_7$=0.0795 *per cent.*	0.062 gm. $Mg_2P_2O_7$ 0.0693 *per cent.*
0.071 gm. $Mg_2P_2O_7$=0.0795 *per cent.*	0.066 gm. $Mg_2P_2O_7$ 0.0715 *per cent.*

Replacing copper nitrate by silver nitrate, filtering the silver phosphide, etc., we obtained:—

Phosphorus from precipitate.	Phosphorus from filtrate.
.102 gm. $Mg_2P_2O_7$=.111 *per cent.*	0.026 gms. $Mg_2P_2O_7$ 0.0297 *per cent.*
.100 gm. $Mg_2P_2O_7$=.116 *per cent.*	0.026 gms. $Mg_2P_2O_7$ 0.0291 *per cent.*

These results clearly show that copper phosphide is more soluble than silver phosphide in the oxidation products of nitrogen formed by the action of copper nitrate on a chloroformic solution of phosphorus in the presence of alcohol.

We have made a series of experiments with the purpose in view to reduce the amount of soluble phosphorus compounds by filtering the silver phosphide in an atmosphere of carbonic acid gas, but this seems to have no influence whatever on the results. In our previous paper we pointed out that the spirit of phosphorus is a rather unstable preparation even when kept in an atmosphere of carbonic acid, and this statement has been verified by recent experiments.

A spirit assaying at the time of manufacture .137 *per cent.* assayed, after one week's standing, only 0.117 *per cent.* and the oxidation products, calculated as phosphorus, had increased from 0.0123 *per cent.* to 0.0313 *per cent.* After three week's standing the percentage of phosphorus had been decreased to 0.088 *per cent.* A spirit prepared under exactly the same conditions, which, however, was not assayed at the time of manufacture, showed after four months standing only 0.0415 *per cent.* of yellow phosphorus and 0.087 *per cent.* of phosphorus present as oxidation products.

Only freshly prepared spirit of phosphorus should therefore be used.

Phosphorus Pills:—The process applied for assaying phosphorus pills and tablets both of plain and complex composition, is almost identical with that given for the assay of phosphorus paste.

A quantity of pills equivalent to about one grain of phosphorus is mixed in a bottle with 25 cc. of air-free water and 100 cc. of air-free chloroform. The air in the bottle is replaced by carbonic acid gas and the mixture is then shaken well until the pills are disintegrated. After allowing the liquids to separate as much as possible the aqueous layer is siphoned off. The mixture is then shaken with sufficient tragacanth to eliminate the remaining water, an aliquot part of the chloroformic solution is filtered off, treated with copper nitrate, etc.

We have examined a great number of pills and tablets and the following results may therefore be of interest:—

Phosphorus Pills plain 1/100 *gr.*
1/92, 1/92.7, 1/92, 1/93, 1/90 gr.
Phosphorus Pills plain 1/25 gr., 1/23.4, 1/24.2, 1/25.

Phosphorus Pills plain 1/50 *gr.*
1/48, 1/45, 1/46.5 1/46.2 gr.

Pills claimed to contain 1/30 gr. of phosphorus in addition to extract of damiana and extract of nux vomica, were found to contain 1/30 gr. and 1/31 gr. of phosphorus respectively.

Four lots of Aphrodisiac pills which contained, in addition to 1/100 gr. of phosphorus, extract of damiana and extract of nux vomica assayed 1/102 gr., 1/112, 1/98, 1/101 gr.

Another kind of Aphrodisiac pills which contained, in addition to the above ingredients, powdered muirapuama were found to contain 1/93 and 1/94 gr. of phosphorus instead of 1/100 gr. claimed on the label.

Pills coated with sugar, showed that no loss of phosphorus is entailed in the coating process as shown by the assay of four lots of Aphrodisiac pills which assayed, instead of 1/100 gr. of phosphorus, 1/102, 1/98, 1/101 and 1/102 gr.

All these assays were carried out with the copper method without filtering the copper phosphide. These results were obtained with freshly-made pills. In the manufacture of these pills an excess of 10 *per cent.* of phosphorus had been added to the pill mass in order to meet any loss of phosphorus by volatilization and oxidation.

That, however, phosphorus pills are not absolutely stable may be shown by the following results:—Plain phosphorus pills which were one year old showed only 86.2 *per cent.* of the amount of phosphorus claimed on the label; pills containing 1/50 gr. after one and one-half years showed only 83.5 *per cent.;* one year old 1/100 gr. pills assayed 76 *per cent.;* nine months old 1/150 gr. pills only 79 *per*

cent. These results seem to show that the greater the dilution of the phosphorus in the pill mass the greater the loss of phosphorus.

While the loss of the metalloid is not very great in plain pills it is quite marked in complex pills. Aphrodisiac pills which were one year old and which contained 1/100 gr. of phosphorus, in addition to extract of nux vomica and extract of damiana, contained after one year only 42 *per cent.* of the phosphorus present.

In a lot of Aphrodisiac pills one year old, which contained nux vomica and damiana with 1/100 gr. of phosphorus, only 57 *per cent.* of the phosphorus was found.

A lot of the same kind of pills 11 years old showed only 16 *per cent.* of the phosphorus as claimed on the label.

Pills containing in addition to 1/100 gr. of phosphorus, ¼ gr. of extract of nux vomica, showed after three years 46.5 *per cent.* Pills containing in addition to 1/50 gr. phosphorus, ¼ gr. of extract of nux vomica, showed after one and one-half years 42.5 *per cent.* of phosphorus, while other pills which contained in addition to 1/50 gr. of phosphorus, ⅛ gr. of extract of nux vomica, after the expiration of three years still showed 75 *per cent.* of phosphorus.

Pills containing 1/50 gr. of phosphorus in addition to 1 gr. powdered cantharides and 1 gr. of powdered nux vomica, showed after two years 68.5 *per cent.* of the amount of phosphorus originally present.

Phosphorus, Quinine and Nux Vomica pills containing 1/50 gr. phosphorus, 1 gr. quinine sulphate and ¼ gr. extract of nux vomica contained after one year 45 *per cent.* of phosphorus. On the other hand pills containing 1/40 gr. phosphorus, 1 gr. zinc sulphate, 2 grs. extract valerian, still showed after three years 91 *per cent.* of the phosphorus originally present.

That the presence of extracts has a greater influence on the dissipation of the phosphorus than plain ingredients such as alkaloids, etc., may be shown by the following results. Phosphorus and Strychnine pills supposed to contain 1/50 gr. phosphorus and 1/60 gr. strychnine showed after one year 89.5 *per cent.* of phosphorus; pills containing 1/100 gr. of phosphorus and 1/60 gr. of strychnine still showed after three-quarters of a year, 93 *per cent.* of the amount of phosphorus. Phosphorus, Quinine and Strychnine pills containing 1/50 gr. of phosphorus, 1 gr quinine sulphate, 1/60 gr. strychnine, after two years still contained 85 *per cent.* of phosphorus.

As has been pointed out in our previous paper, the presence of iron salts seem to favor the dissipation of the phosphorus, because in four lots of pills containing varying amounts of iron in the form of iron carbonate or reduced iron, phosphorus was found only in very small amounts. We have again made quite a number of experiments with Aphrodisiac pills containing in addition to the other ingredients, phosphorus and iron bromide. We have tried the copper nitrate silver nitrate and copper acetate methods, but in no case have we been able to obtain trustworthy results. The phosphorus seems to act on the iron bromide and thus make the assay extremely difficult, if not impossible.

Of tablets we examined only a few lots containing extract of damiana and extract of nux vomica in addition to 1/30 gr. of phosphorus. In freshly made tablets we found 1/29, 1/31, 1/28, 1/33 gr. of phosphorus. On reassaying the tablets after 1, 2, 4 and 6 months we found the amount of phosphorus originally

present in the tablets had decreased considerably. This seems to show that the phosphorus keeps better in pill mass than in tablet mass and also better in coated than in uncoated pills.

Elixir of Phosphorus:—In our previous paper we reported that we had applied the following process for estimating yellow phosphorus in elixirs of phosphorus, especially in those which are largely used as aphrodisiacs, such as Elixir Phosphorus, Nux Vomica and Damiana.

25 cc. of the elixir under examination are mixed with 100 cc. of air-free chloroform in a 150 cc. bottle, the air in the bottle is replaced by carbonic acid gas and the mixture is shaken well for one-quarter hour. An aliquot part of the chloroformic solution (taking into consideration the amount of alcohol present in the preparation) is then separated, shaken with copper nitrate and the assay is then finished in the usual way. We reported at that time that elixirs of this kind made with freshly-prepared spirit of phosphorus do not retain the phosphorus for any length of time. This could be proven not only by assaying the elixir according to the copper method, but also by applying Mitcherlich's test.

Quite recently we have modified the method in the following way:—25 cc. of the elixir is mixed with 50 cc. of air-free water in a separator, the air in the separator is replaced by carbonic acid gas and the mixture is shaken out with 50, 25 and 25 cc. of air-free chloroform. By this process the alcohol present in the elixir does not need to be taken into consideration. The combined chloroformic liquids were then shaken out once with 10 cc. of air-free water in order to remove any oxidation products of the phosphorus suspended in the chloroformic solution, and the latter was then treated with copper nitrate in the regular way. An elixir which contained in addition to the other ingredients 24.40 *per cent.* of spirit of phosphorus, yielded when assayed by the copper method only 0.0198 *per cent.* of phosphorus. The spirit used for making this elixir assayed .09 *per cent.* of elementary phosphorus. After three weeks standing in an ice-chest the percentage of phosphorus had been reduced to 0.0179 *per cent.*, thus showing a loss of about 10 *per cent.* It is rather difficult to estimate the amount of phosphorus in the regular Elixir Phosphorus, Nux Vomica and Damiana which contains only about 6 *per cent.* of spirit of phosphorus. We have made a great number of experiments with various lots of this elixir, but the results obtained, although agreeing very well when made with the same lot of elixir, varied considerably from those obtained with other lots of the elixir. This is probably due to the presence of traces of phosphates in the various ingredients used for manufacturing the elixir, which, considering the small amount of phosphorus present in the preparation, are liable to upset the results considerably.

Having found that a reliable method is available for estimating phosphorus in most pharmaceutical preparations, we expect to determine the rate of deterioration of such products. We shall also apply other copper salts, copper sulphate, acetate, chloride, etc., for converting the phosphorus into phosphide, and we hope to be able to report on these experiments at the next meeting of the Association.

Analytical Laboratory of Sharp & Dohme, Baltimore, Md., July, 1914.

Section on Education and Legislation

Papers Presented at the Sixty-Second Annual Convention

PHARMACEUTICAL EDUCATION.

FRANK R. ELDRED.



Pharmaceutical Education is a very comprehensive title, and it will, perhaps, be well at the outset to state that the present discussion refers only to the training in the United States for certain branches of pharmaceutical work.

The consideration of pharmaceutical education is usually limited to the educational requirements of retail pharmacy, but it must be remembered that the requirements of modern pharmaceutical manufacturing and drug inspection are quite different. Students frequently seek advice in regard to the course of study which should be pursued to fit them for positions as drug chemists; and directors of schools of pharmacy, chemistry, and chemical engineering occasionally ask the same question. The answer is usually unsatisfactory, for this branch of pharmaceutical education has received very little attention. Teachers have frequently had experience as retail pharmacists, but rarely as manufacturers or drug inspectors, therefore, they cannot know the requirements for such positions from personal experience, and it remains for official and industrial drug chemists to indicate the character of training required. The writer believes that this should be essentially the same for chemists who engage in drug inspection and manufacturing, and it is hoped that this discussion will lead to the consideration of this field by those engaged in educational work.

The first thing to establish, is the demand for such specially-trained men, but this seems evident since the federal government and all the states require drug chemists, and every pharmaceutical manufacturer requires from one to fifteen or twenty such chemists. The conditions which exist in different manufacturing establishments vary widely; in the small factory all of the scientific work may devolve upon one man and in such cases he must have a broad and varied pharmaceutical training if he is to succeed, however such positions offer the greatest opportunities for general experience. In the large establishments where many scientific workers are employed, a high degree of specialization exists, some have no knowledge of pharmacy, others a knowledge of only one branch of the industry; nor is a pharmaceutical training necessary to all, for a botanist in the employ of such an establishment should be essentially a botanist with particular knowledge of the vegetable drugs and not a pharmacist with some additional training in botany. The chemist or pharmacist, however, should have general pharmaceutical training and it is to the education of this class that the present discussion refers.

The demand being established it may be asked if there is not a sufficient supply of such chemists. The existing condition is that practically no students have received or are receiving the kind of training desirable in such positions and graduate chemists with no pharmaceutical knowledge are usually employed, the alternative being to employ men who have obtained such knowledge at the expense of their general chemical training. A man with good chemical training can by years of experience obtain the necessary pharmaceutical knowledge, but it is much more difficult for the graduate pharmacist to acquire a sufficient knowledge of chemistry in this way. In a small establishment, however, where only one chemist is employed, he must have at the beginning, the pharmaceutical as well as chemical training. In the larger establishment the young chemist will probably be started on analytical work which does not require pharmaceutical training, although familiarity with the pharmacopœia and with medicinal products would be of great advantage.

Teachers of engineering and of industrial chemistry, wish to keep their students out of the drafting room or analytical laboratory, unless these may be expected to act as stepping-stones to executive positions or to actual engineering practice. In the factory where medicinal products are manufactured a certain amount of research work is necessary and many chemical engineering problems are solved; this work should be done by men promoted from the analytical laboratory, provided they have the essential pharmaceutical knowledge acquired either by training or experience, otherwise such positions must be filled by bringing in specially-qualified men if they can be found. Unless he has had a preliminary pharmaceutical training only the exceptionally energetic and studious chemist engaged upon some particular line of analytical work, can fit himself for such positions.

If it be granted that there is an active demand for drug chemists which is not supplied by the existing system of pharmaceutical education, the next step will be to determine the length and character of a course calculated to train men for such positions. This is a difficult subject and one which must receive the attention of many men engaged in educational and industrial work before satisfactory courses can be outlined. The writer will therefore only treat the matter in a general way and touch upon some details which are matters of personal observation.

All of the other branches of pharmaceutical work depend upon retail pharmacy for their existence, therefore it is highly desirable, if not absolutely necessary, for one who expects to advance very far in any line of pharmaceutical work, to have some information in regard to the retail drug business upon which to build his general knowledge of pharmaceutical matters. Actual experience in a drug store, is the best way to acquire such information, although if this is impossible, judicious reading and observation will go far toward supplying it.

There are many excellent chemistry courses in which the time given to the study of language, mathematics, physics, and general, theoretical and analytical chemistry, is properly proportioned, and the prospective drug chemist should receive just such training; in addition a thorough drill in assaying drugs should never be overlooked. The subjects provided for in the Pharmaceutical Syllabus should be included except where these are covered by the regular chemistry course. Some engineering knowledge is also essential to the manufacturing pharmacist, although it may not be necessary in drug inspection. It may be objected that the

proposed course of study would require six or seven years, but time could be saved in working out the details of such a course and it could undoubtedly be handled in a very satisfactory manner in five years. Would it pay students to take such a course? This can be answered in the affirmative, as most of the men now entering this field have had four years of college work and the additional year would enable them to command a higher salary from the beginning and would enhance their prospects of promotion to positions of greater responsibility.

At the present time graduate-chemists, available for positions in drug laboratories, are frequently deficient not only in pharmaceutical training, but also in their knowledge of physical and physiological chemistry, and it is exceptional to find men who have been trained to make proper use of the chemical literature. There is usually a lack of knowledge concerning the use and care of electrical and optical instruments, balances and weights, and other laboratory equipment, which results in inaccurate work and often in ruined instruments. There has been no engineering or mechanical training and, therefore, a simple mechanical drawing cannot be executed and neither special laboratory apparatus nor factory equipment can be designed. All of these things should be especially emphasized in a course in pharmaceutical chemistry and as the time devoted to such a course will be so fully occupied, extraneous subjects must be omitted. There will be no time for food analysis, mineralogy, metallurgy and other subjects not related to the chemistry of medicinal products, and their places should be taken by drug analysis and by the chemistry of industrial processes more closely related to pharmacy.

Mention must be made of the courses which have already been established for the purpose of training drug chemists. All of these courses must be classed as failures in some degree on account of a lack of coöperation between the industrial and official drug chemists and those engaged in educational work. Four-year pharmacy courses are, as a rule, only a little better than the shorter courses, in fitting men for practical drug work; instead of giving more thorough training in chemistry, the extra time is usually occupied with cultural and miscellaneous scientific subjects in a way which makes it appear that it is somewhat difficult to fill two additional years, when, as a matter of fact, a period of four years is too short a time even if every non-essential, though probably desirable, subject is omitted. A still more illogical course is the three-year course, where the regular two-year pharmacy course is supplemented by a third year of food and drug analysis. To attempt to combine food and drug work in a three-year course is absurd and can only lead to the encouragement and perpetuation of certain abuses which now exist. It would be much better if schools of pharmacy would use their influence to separate food and drug work, rather than to associate them more closely. Since it is unfortunately true that foods and drugs are linked together in the laws, it is particularly desirable that administrative officers should be able to secure the services of chemists who are thoroughly trained in pharmaceutical chemistry to carry on the work of the drug laboratory. The "cramming" of a lot of analytical methods, can result only in their empirical use, and this is one of the conditions which are now handicapping drug manufacturing and inspection. Let the chemical training be so broad and thorough that the principles upon which methods are based can be clearly understood; the limitations of the methods will then be recognized and

they will be used with judgment and modified when necessary to suit varying conditions.

It may be objected that very few men at present connected with drug work, have had the training which has been advocated, yet many succeeded, but it must be recognized that their success would have been earlier and ultimately greater if they had started with the thorough training which has been suggested. We have worked as well as we could with the material at hand, but if thoroughly trained pharmaceutical chemists had been available during the past eight or ten years, this branch of chemistry would be much further advanced and would be recognized by chemists in other lines of work; nor would it be possible for a well-informed chemical engineer to say to the writer, as was done a short time since, "Pharmaceutical work at present is entirely empirical, is it not?"

Scientific Division, Eli Lilly & Company, Indianapolis.

PHARMACEUTICAL EDUCATION, OR THE EDUCATION OF THE PHARMACIST; WHICH SHALL IT BE?

JACOB DINER.

The question of education is justly occupying the minds of many men, educators and laity, and not the least interested in this question are those men who are chiefly concerned with professional education. The medical press for the last ten years has devoted a great deal of time and considerable space to the subject of medical education and the pioneer of American medical journals, the Journal of the A. M. A., regularly brings a column or more on medical education and legislation.

In one of his usual masterly addresses, Henry P. Hynson some time ago sounded the key-note when he spoke of the pharmacist and his need of general education.

Therefore, in taking up the subject of Education as related to Pharmacy and the Pharmacist, we must closely differentiate between the education of the pharmacist and pharmaceutical education.

Modern pharmacy (or, should I say the modern pharmacist?) consists essentially of two integral parts. On one side we must have the professionally or rather specifically-trained man, on the other side we must prepare the same man to be commercially able to avail himself of every honest and legitimate means for the financial advancement of his business. How far shall we educate the embryo pharmacist for one and prepare him for the other,—does modern pharmacy really demand a professionally-trained pharmacist? Is the commercial training compatible with scientific education? To all of which I reply:—Most emphatically yes. The times have passed when the first essential to scientific attainments was utter lack of practical knowledge and disregard of the so-called worldly petty details such as dress, manners, sociability, etc.

The bespectacled professor who forgot his umbrella, his clothes, his meals, his wife, his family, his friends, etc., in short everything that was not ultra scientific still brings forth a sympathetic smile when we see him depicted in our so-called "funny" papers, but modern life and modern scientific progress has no place for him. Just so is the grouchy, misanthropic, sloppy, *yes, sloppy,* old, not to say antiquated, pharmacist in the dimly lit and indifferently- kept apothecary shop, out of place. Thus we must take our young men and teach them pharmacy consisting of the regular, more or less classic, curriculum and at the same time inculcate them with modern business methods so that they may advantageously market their professional attainments.

The New Syllabus of Pharmaceutical Education recently issued by the Committee and adopted by the New York State Board of Pharmacy assigns a number of hours for the subject of commercial pharmacy. No better step for the advancement of pharmacy and pharmacist could have been taken. The pity of it is that these hours are taken from the important subject of pharmacy (practical and manufacturing). Far better had they been taken from the relatively less important subject of Pharmacognosy. I do not want to be understood as holding the subject of Pharmacognosy as superfluous or non-essential. But we must admit that, outside of the specialist in this branch, it is of considerable less importance to the practical and practising pharmacist than are the subjects of Manufacturing, Prescription-Compounding and Merchandising, so long as the regulation Pharmacy course can only take up 1200 hours in two calendar years with a preliminary education of one year high-school or "its equivalent." Would I then want an increased curriculum with higher preliminary education? Yes, and no! For purely pharmaceutical training to meet the demands of the every-day variety of Pharmacy I would most emphatically oppose any attempt at increasing the requirements, either preliminary or professional. I would modify, I would alter, but I would not increase. I would change the foolish attempt to make an organic chemist, a trained pharmacognocist, a physiologist and a Latin scholar, out of a young man who has obtained 15 regents points by an examination in Russian, Italian, Spanish, or whatever his native tongue may be, and who does not know how to handle the simplest mathematical problem. For pharmaceutical education the New Syllabus is more than sufficient.

For the man who wants to specialize, who desires to go beyond the prescription and sales-counter increased training is demanded, and this is provided for in the Syllabus by higher preliminary requirements, more specific training and corresponding higher degrees.

When we come to the education of the pharmacist, that is a different matter altogether.

Let us for once refuse to imitate the ostrich. Let us look the situation in the face, calmly and honestly. Of what material is the great bulk of pharmacists composed? Are they really professional men, and if so, are they really educated men? For after all the collection of a certain amount of special knowledge does not constitute education. How many pharmacists are even approximately posted on the most important topics of the day, even including the European war and baseball? How many pharmacists get out of their four walls to see the world

and be seen by it? How many are interested in scientific and mechanical progress or even the progress made in our own branch? Out of 40,000 pharmacists or over, how many are members of the A. Ph. A., of the N. A. R. D., of their own State Pharmaceutical Association? At a paper read recently at the New York State Pharmaceutical Association the figures given for attendance at State Pharmaceutical Associations throughout the entire United States, showed, if my memory serves me right, an attendance of less than 10%. What Pharmacy needs for its rank and file is not increased Pharmaceutical Education, but increased Education of the Pharmacist!

THE COMPOSITION OF BLOOD.

When Mephistopheles insists that the bond he makes with Faust be signed with blood, and remarks, "Blut ist ein ganz besondrer Saft" (Blood is an extremely peculiar juice), even Goethe, great scientist as he was, had no conception of how wonderful a fluid it is. Human blood consists of a transparent yellowish liquid called the plasma, in which float red corpuscles and at least five kinds of white corpuscles, usually called leucocytes. When the health is normal, each cubic millimeter of the blood contains about 5 million red corpuscles and 7500 leucocytes. The enormous numbers of these corpuscles, red and white, may be faintly realized when it is stated that a cubic inch is equal to nearly 16 thousand cubic millimeters. These cells are greatly changed both in number and condition by ill health. Some of the white corpuscles are called phagocytes (cells that eat) because when the blood is invaded by disease-causing (pathogenic) parasites, it is the business of the phagocytes to run them down and make a meal of them. So wonderful is the behavior of the phagocytes that one eminent scientist recently said of them, "The mononuclear and polynuclear leucocytes have qualities which it is very difficult to call anything else but consciousness." That is to say, each cell is endowed with a mind that directs its marvelous activities. But more wonderful than the corpuscles that it contains is the plasma itself. It can be so changed or modified by zymotic diseases or by certain serums or vaccines that the patient will be immune for years or even for life against a second attack from the same disease, but he will be safe from no other disease of the infectious kind unless he has been vaccinated for it with the proper serum. Blood is indeed an "extremely peculiar juice." How peculiar, who shall say?—*Ambition.*

Section on Historical Pharmacy

Papers Presented at the Sixty-Second Annual Convention

FORTY-FIVE YEARS OF MANUFACTURING PHARMACY.

FRANK O. TAYLOR, PH. C.



In view of the fact that the American Pharmaceutical Association is meeting this year (1914) in the recognized center of the pharmaceutical industry in America, the Secretary of the Historical Section suggested that a brief history of Parke, Davis & Company, and some account of their connection with advances in pharmacy and medicine would be appropriate to the occasion, and of special interest to all those present who have made a tour of inspection through these laboratories.

To you gentlemen, who, in your daily work, have reason to be familiar with the preparations of Parke, Davis & Company, it is almost unnecessary to speak with regard to present conditions and you are, in a measure, familiar with the extent of these laboratories and the purposes that animate them. It is, however, probable that many of the present members of the American Pharmaceutical Association are not familiar with the early history and growth of this firm and particularly the connection it has had with the development of pharmaceutical preparations; so it will not be amiss to give a brief account of the firm itself before speaking of its connection with medicinal progress.

DEVELOPMENT OF PARKE, DAVIS & CO.

Up to the time of the early sixties it had been the almost universal custom for each pharmacist to prepare for himself such galenical preparations as he needed, but about this time several firms began manufacturing work on a small scale, developing this in most cases in retail drug stores that had been established for some years. The idea of centralized manufacture of medicinal preparations was just in its infancy and was probably not recognized as such at that time, but there seemed to be a field for such a firm, and Dr. S. P. Duffield, after having previously entered into two brief partnership arrangements with other men, formed a co-partnership with H. C. Parke on May 7, 1867. This firm continued to do business until 1869, when Dr. A. F. Jennings bought out the interest of Dr. Duffield and the firm became Parke, Jennings & Company, George S. Davis being one of the company. On November 16, 1871, Dr. Jennings retired from the firm and it became, for the first time, Parke, Davis & Company, existing as a co-partnership, and continued as this until January 14, 1875, at which time, as it was developing rapidly and it seemed desirable to perpetuate the firm in some form better than a

* Read before Historical Section, Detroit, 1914.

co-partnership, it was incorporated with a capital stock of $125,000, of which $81,950 was paid in.

All this time the laboratory had been located at the corner of Cass and Henry Streets, Detroit, with an office at the same place, and not until 1875, about the time of incorporation, was it moved to its present location. At this time the office was moved to 52 Larned Street, West, where it remained until 1877, when it was transferred to the site of the present laboratories. From this time on the laboratories gradually increased in size until at present they cover several blocks and have, besides their Detroit laboratory, branches in Canada and England, where manufacturing is carried on, and branch offices in almost all parts of the world.

Guiding Principles:—The tendency of modern business has, for many years, been to emphasize the necessity of absolute integrity, both in fact and in spirit, in all dealings, and this idea that has begun to very thoroughly permeate all our business institutions was, it seems to me, one of the chief reasons for the rapid and permanent growth of a business that begun so short a time ago and has increased so tremendously. I can not better illustrate what I mean than to quote from a little leaflet printed many years ago when the firm was young, setting forth their beliefs, and which they entitled "Our Creed and Code":—

"We believe, that, in combating disease, only the best quality of drugs is permissible, and that to their manipulation should be applied the highest scientific skill.

"We believe that the issuing of inferior medicines of any kind is unjustifiable from any point of view.

"We believe in standing solely upon the intrinsic merits of our preparations, and in making no false pretenses; in doing the best that scientific knowledge and skill will accomplish and in doing it honestly and faithfully.

"We believe in working fully in harmony with our pharmacal and medical friends, and in gratefully accepting any suggestions that may tend to our mutual profit. Our watchwords are *Purity, Accuracy, Reliability.*"

Historical Periods:—The history of Manufacturing Pharmacy as a whole and of Parke, Davis & Co., may be divided into four periods characterized by the most important activity of the time, which periods are practically identical in date especially the last three, as this firm in each of these was the leader in the special work involved. These periods are as follows:—

1. Formative Period—1867 to 1874.
2. Botanical Research Period—1875 to 1882.
3. Standardization Period—1882 to 1894.
4. Biological Period—1895 to present time.

These are of course not sharply defined, the work characteristic of each of the last three was in the course of development for some time before the dates assigned and the appearance of a new line of work by no means indicated a termination of previous endeavors, in fact, it frequently widened the scope of all investigations. For these reasons we cannot deal with each period by itself except in a general way, but in most cases trace each line of products or development of process through its entire history. For want of time these accounts must perforce be brief as possible.

Fluid Extracts:—The first products manufactured in the early laboratory were a few chemicals and a line of fluid extracts, and it is interesting to note that the

firm considered the process of maceration of the drug with the menstruum and extraction by hydraulic pressure as the most satisfactory one, as it avoided the use of heat in concentrating weak percolates. It is true that quite a while before this, the process of percolation had been introduced, but the firm, feeling that the experience with this method which they and others had so far acquired, was not sufficient to insure it giving the best possible fluid extracts on a small manufacturing scale, and also being fearful of the vacuum apparatus of that time, decided to adhere to the older method for some time longer and in one of their early price lists state, "We neither percolate nor use heat in any form whatever."

In 1882 a combination process involving percolation as well as maceration was evolved, and this in a few years gave way to percolation exclusively. At the present time, as everyone knows, the process of cold repercolation has been so carefully worked out that it is the best means of extracting drugs and the most economical of solvents used. To the simple percolation by gravity there is now, in many cases, added the use of compressed air, which, besides hastening the percolation, renders it more thorough by forcing the menstruum into the structure of the drug.

After the business had been organized and acquired a little momentum through a few years of experience, the members of the firm began to look around for new things that would be both useful to pharmacists in general and profitable to themselves. As fluid extracts of various drugs were so widely used, it was but natural to look for unknown or little used plants that might be of medicinal value, and to this end, a systematic search was begun about 1874, which continued for many years, and gradually developed along other lines. If a new plant was heard of from the far west of the United States or some foreign country, if the suggestion was made by any physician through correspondence or by a published paper as to the efficacy of a heretofore unused plant, it was immediately investigated and if it gave promise of being really useful, supplies were obtained and the fluid extract distributed to physicians.

Botanical Research:—At this same time, through these same years, an immense volume of literature was prepared by the firm from the reports of physicians and other scientific men all over the country giving detailed accounts of the botanical character of the new drugs and their medicinal properties. Some few well-known preparations are generally recognized as having been introduced by Parke, Davis & Company, but it may surprise you even as much as it has the writer, to find how many drugs now prominently known, were originally brought to the attention of the medical profession by this young firm, especially when it is considered that at the time they were doing this work, the financial outlook was anything but pleasing, as the influence of the panic of 1873 was still strongly felt.

In the course of these investigations Parke, Davis & Co., through representatives, explored the northern parts of California, Washington, Oregon, British Columbia and Mexico. One representative was sent to the Fiji Islands to obtain a supply of the drug Tonga; another going to the West Indies brought back Jamaica Dogwood and a few other less important drugs. A special representative, dispatched in 1881, made a trip from the mouth of the Amazon River about 2500 miles into the interior, and as a result of this expedition the drug Manaca

was added to the growing list of new remedial agents. About the same time another representative proceeded inland from Buenos Aires on horse-back clear across the mountain range to the Pacific coast. This work resulted in the discovery of the herb Chekan, and the obtaining of supplies of Boldo, Quebracho and some other Chilian drugs. In 1885, Dr. H. H. Rusby made an extensive trip in South America, in the interests of Parke, Davis & Co., as a result of which he brought back much scientific information and among many other plants the drugs Pichi and Cocillana, together with obtaining extensive supplies of Coca from Peru.

As you are aware it is almost impossible to locate absolutely the first medicinal use of a drug that has been known for years and a distinction must be made between the one who may first find a medicinal use for a plant and him who makes this common knowledge or brings a drug from obscurity to a place of more or less prominence in Materia Medica.

The somewhat extensive list following includes all but a few drugs of evanescent usefulness that have been introduced to medical use by Parke, Davis & Co. In all cases preparations of these drugs were practically unknown in the United States except as they may have had a very restricted local use and some of the most important ones were absolutely new to the medical profession, as for example, Cascara, Yerba Santa, Berberis, Grindelia, etc. The writer has spent considerable time going over old literature of the firm and other journals to verify as far as possible, the priority of introduction of these drugs and has found a number for which the firm does not ordinarily claim credit that they seem to have been chiefly instrumental in introducing, at least in the United States. It has not been possible to make a complete search of journal literature and find the earliest mention of all these drugs but the dates given being those at which the Fluid Extracts were first put on the market by Parke, Davis & Co., undoubtedly are the first appearance of such preparations of all these drugs. The names in italics, are drugs recognized in the U. S. P. eighth revision.

1869—*Black Haw.*
1874—*Guarana.*
1874—*Eucalyptus Globulus.*
1874—Bearsfoot.
1875—*Coca.*
1876—Cereus Grandiflorus.
1876—*Muskroot* (*Sumbul.*)
1876—*Jaborandi* (*Pilocarpus.*)
1876—Sundew
1876—Evening Primrose.
1876—Bladderwrack.
1876—*Damiana.*
1876—*Yerba Santa.*
1876—*Grindelia robusta.*
1876—Sandalwood.
1877—*Grindelia Squarrosa.*
1877—Ustilago Maydis.
1877—Kava-Kava.
1877—Ailanthus Glandulosa.
1877—Urtica Dioica.
1877—*Berberis Aquifolium.*
1877—Boldo Leaves.
1877—*Cascara Sagrada.*
1877—Five-flowered Gentian.
1877—Kamala.
1877—Guaco.
1877—Paraguay Tea.
1878—Cedron Seed.
1878—Coto Bark.
1878—Cereus Bonplandii.
1878—Quinine Flower.
1878—Areca Nuts.
1878—Shepherd's Purse.
1878—Yerba Reuma.
1878—Great Laurel.
1878—Indian Blackroot.
1879—Jamaica Dogwood.
1879—Rhus Aromatica.
1879—Manaca.
1879—Quebracho Bark Powd. F. E., 1881.
1879—*Saw Palmetto.*
1881—Tonga.
1881—*Corn Silk.*
1882—Sierra Salvia.
1882—*Convallaria.*
1882—Cheken.
1886—Pichi.
1888—Cocillana.
1908—Cannabis Americana.

As I have said, some of these drugs had been used in their local habitat for a long time, as for example, Coca, which had been known for centuries in Peru and used widely in the mountains of South America, and its chemical constituent had been investigated in Europe, but it had not been introduced into this country to any appreciable extent. Again, Manaca had, prior to 1879, been recognized in the Brazilian Pharmacopœia, but was practically unknown outside this country and had not been used in the United States. Sandalwood has, of course, been known in India for centuries, but its medicinal use, especially in the form of a fluid extract of the wood, had received practically no attention in the United States.

It is interesting to note at this time that of the total number of drugs mentioned, twenty of them are at the present time recognized in the United States Pharmacopœia or National Formulary, and thirty-two of their fluid extracts are still in sufficient demand to warrant manufacture by Parke, Davis & Company. Another interesting feature is that the majority of these drugs appeared within three years, viz., 1876-77-78. Altogether approximately fifty different drugs have either been introduced as entirely new by this firm, or have been taken from great obscurity and brought to some degree of prominence.

Publications:—Closely associated with the introduction of new remedies was the dissemination of knowledge concerning them, and so from occasional bulletins giving information on this subject, there gradually developed a systematic series of publications. A Publication Department was organized entirely independent of the manufacturing and sales work, and journals dealing with pharmacy, therapeutics and surgery in their purely scientific aspects began to be published, not all of them at once, but in the course of time.

From the early bulletins there first developed a journal entitled "New Preparations," beginning in January, 1877, and published quarterly for this and the next year, and then monthly during 1879. The legend on the title page indicates its purpose, viz., "A quarterly journal of medicine devoted to the new therapeutical agents." In 1880 the scope of this publication was modified somewhat, and its size increased, and it began to be published as "The Therapeutic Gazette" devoted exclusively to therapeutics. From that time since, it has continued to the present day as one of the well known medical publications of the country.

As a publication of a different and more local character, there began in 1877 "The Detroit Lancet" which, in 1886, was changed to "The American Lancet," and so continued until 1893.

In January, 1883, another journal entitled "The Medical Age" was begun which, as referred to on the title page, was "A semi-monthly journal of medicine and surgery." The publication of this continued until the close of 1906, at which time it was incorporated with The Therapeutic Gazette.

In April, 1895, a somewhat similar journal was introduced under the title "Medicine" which was a monthly journal of medicine and surgery. In January, 1907, it was also combined with the Therapeutic Gazette.

These facts are probably generally known, but it may not be so well understood that for many years this firm were the publishers of the Index Medicus of world-wide reputation. A brief statement of the vicissitudes of this publication may not

be amiss. It was started in 1879 under the editorship of Dr. J. S. Billings of the U. S. Army, and Dr. Robert Fletcher as his assistant, and published by F. Leypoldt in 1884 of New York. It continued thus until the death of Mr. Leypoldt in 1884, when an announcement was made that it would be discontinued, as it had been published at a considerable loss, and they did not know of anyone who would finance it. After three months intermission, it was taken over by Mr. George S. Davis, representing the Publication Department of Parke, Davis & Company, brought up to date in the first issue of 1885 and continued to be published under these auspices until April, 1895. The publication was then taken over by the editors and after some other changes during the next few years, it was finally placed in the hands of the Carnegie Institute in 1903, where it now remains.

As exclusively related to pharmacy and of interest to pharmacists, there was begun in January, 1887, "The Druggists' Bulletin" which was stated to be "A monthly Epitome of Pharmaceutical progress and news." Starting with a very small beginning, it continued under this title until the close of 1890, when it was changed to "The Bulletin of Pharmacy," as which it is now well known to you all.

Of these various publications, the two which now remain as a sifting out of that which has gone before are "The Therapeutic Gazette" and "The Bulletin of Pharmacy."

Standardization:—As the activity in the search for new drugs began to wane, there appeared the forerunner of what, it seems to me, is the most important advance in pharmacy that has occurred in modern times, viz., the application of the principle of standardization, or uniformity in production of preparations of drugs. With no flourish of trumpets and little realization of what is heralded, in September, 1879, there appeared a preparation known as Liquor Ergotæ Purificatus, which was a fluid preparation of ergot, standardized by a simple form of assay so that each different lot was of uniform character. The assay appears to us, at this day, as very crude and inefficient, but we must remember that this was simply the beginning, and any kind of an attempt to give uniformity of strength was an advance upon untraveled ground.

According to the best researches of the time, the activity of the ergot was supposed to be chiefly in the sclerotic acid, and a crude estimation of this was made by the precipitation of the organic acid with lead acetate. The standard was this: "Ten cc. of the normal liquid require for complete precipitation, 100 cc. of a solution containing 1% of crystalized lead acetate."

This truly appears to us with the retrospect of forty-five years of experience, as almost laughable, but it was the best that the knowledge of the times afforded and was a step toward the dreams of the future which were beginning to take form in actuality. With this there began a systematic investigation of the possibility of rendering uniform, fluid preparations of many drugs with the result that in February, 1883, there was publicly announced a list of twenty normal liquids which were actually fluid extracts standardized by some form of assay, in most cases an estimation of the alkaloids which they contained. The man responsible for the beginning of these assayed fluid extracts and who established

the analytical methods for their control is Dr. A. B. Lyons, to whom in this, as in many other things, pharmacy owes much.

The process for the determination of the alkaloids chiefly employed was the now obsolete method of titration with Mayer's reagent, but it is evident that the years from '79 to '83 had been well spent, when we note that the alkaloidal standards of strength adopted for preparations of "normal liquid belladonna" leaves and root were, in each case 0.44% of alkaloid and the present U. S. P. standard for fluid extract belladonna root is 0.4 and for the leaves 0.3%, the "normal liquid ipecac" was 1.5% alkaloid, the same as now official for the fluid extract. The standard for "normal liquid nux vomica" was a little lower than the present U. S. P. standard for fluid extract, it being then 1.5% of total alkaloids as against 1% of strychnine at the present time. This last mentioned fluid is chiefly interesting for the fact that the assay process more nearly approximated that used at present than any other, it being carried out by adding a few drops of dilute sulphuric acid to the liquid, evaporating off the alcohol, washing the residue with ether, taking it up at the same time with water, finally rendering alkaline with caustic soda, shaking out the alkaloid with a mixture of chloroform and ether, and weighing the product so obtained.

Of the further development of the chemical standardization of drugs and their preparations it is almost unnecessary to speak, but it is worthy of notice that the work instituted by this firm and followed in later years by a host of helpers has always kept far in advance of the official requirements of the various Pharmacopœias as they have been established.

As an extension of the work of standardization of drugs and their preparations, there appeared, with the beginning of the biological period in 1894, the first fluids that were standardized by physiological assay as distinct from any chemical assay. It is an interesting coincidence that the first fluid so standardized was also the first one whose uniform production had been attempted by a chemical assay, viz., fluid extract Ergot. Following this there came, at intervals, standardized products of a number of other drugs, such as the various heart tonics with which you are entirely familiar. The development of different methods of physiological test is outside the scope of this paper, and has been described extensively in other publications. Suffice it to say that this general principle, whether applied along chemical or physiological lines, has undergone many changes with the establishment of improved methods of work, and still gives promise of much further development that will widen its present extensive scope.

Going back now to an earlier time, let us consider very briefly some of the different lines of pharmaceutical manufacture that have been developed. It would require too much time and space to treat separately and in detail different lines of products like pills or tablets or ampoules, etc., and so perforce they must be considered very briefly, emphasizing only the most salient features of improvements that from time to time have been made in their preparation.

Tablets:—There have been many interesting features in connection with the development of tablet manufacture, but none of them are such that they can be called important advances in pharmaceutical manufacturing, and it is only necessary to say that the gradual development of this line of products during the years

that they have been in vogue has had to do chiefly with the mechanical perfection of the tablets, their speed of solubility or disintegration, and detailed knowledge about how best to handle an almost infinite variety of substances used in them.

The most important manufacturing advance has been the development of new machinery, so that where originally a few tablets might be made by the retail druggist by hand and later by a machine giving a single tablet at each impression, we have now especially designed machinery such as has been built in the machine shops of Parke, Davis & Co., which have a capacity of a million and a half tablets per ten-hour day. This development has recently been described at length by Dr. L. E. Kebler in his paper presented to this association last year.

Pills:—The origin of pill manufacture in a small way is lost in obscurity. By this I mean the preparation of pills by the retail druggist. It is very natural, therefore, that on the manufacturing scale, it should be one of the first products made, together with the fluid extracts of drugs. Here again the development of the product coincides with the development of automatic machinery, and you are all of you well informed regarding recent improvements in such machines. The strides that have been taken measure up well with those in tablet manufacture. Where their production was formerly, by hand, limited to a few thousand per day, a single machine will now turn out anywhere from five hundred thousand to two million pills in a day, depending upon the size of the pill. The old method of gelatin-coating pills by impaling them on pins and dipping in gelatin solution was done away with by Parke, Davis & Co. when they originated the machinery for holding the pills by vacuum while being dipped.

The most important modification of pills in the last few years is the introduction of the so-called "Soft Mass Pill," so made that the interior is quite soft and protected by the hard shell of the coating, just thick enough so that the entire pill may be easily crushed between the fingers. This pill is made by the mass process and retains its softness for many years.

In this connection it is interesting to note that Parke, Davis & Co. who introduced this pill in 1909, evidently felt that this was a desirable attainment a great many years ago, as back in 1875, they are careful to state that their pills are especially desirable because they are "coated while the mass is yet soft." At that time, however, the idea of the soft mass was not at all what it is to-day.

Pepsin:—The extensive use of digestive ferments is of comparatively modern origin, and this firm has had very much to do with the development of pepsin manufacture and rendering the use of this digestant popular and convenient. The introduction of different strengths of pepsin as made by Parke, Davis & Co. may be considered as identical with the development of pepsin manufacture thus indicated.

In 1874 they introduced a Saccharated Pepsin of such a strength that "five grains would digest sixty grains of coagulated albumin," being thus of a 1:12 strength. This was considered a very excellent product, although so weak that it would be counted as worthless to-day, and thrown away as waste. The mixture of the Pepsin with milk sugar was necessary because of the exceedingly hygroscopic nature of Pepsin thus made, owing to the presence of a considerable amount of peptone, which they had not yet learned how to separate from the Pepsin. In February, 1881, there appeared a pepsin of which they were rather

proud, which was dignified with the name "Concentrated," it being so strong that one grain would digest 100 grains of coagulated albumin, but this achievement was very quickly improved upon so that in February, 1883, there was presented a so-called "pure" pepsin, which was stated to have an activity of 1:450 to 1:500. In the meantime, the U. S. P. of 1880 had appeared and had made official a Saccharated pepsin with a strength of 1:50. About the same time some one got the idea that pepsin prepared from sheep stomachs, was in some way better than that prepared from hogs stomachs, so with the idea of being fully abreast of the latest developments the firm put out at this time a so-called pure Sheep Pepsin having a strength of 1:350 to 1:450. This sheep pepsin was short-lived, however, and in a few years was again taken from the market as there was no reason why it was any better medicinally than the established variety. In January, 1885, the development of pepsin had proceeded to such an extent that the peptones could be largely removed and the pepsin produced in a scale form which is now so universally known. Between this and the year 1888 continued researches brought about a tremendous advance and in that year a pure pepsin in scale form free from peptones and marked "Non-hygroscopic," (which it certainly was as compared to previous productions) and having a strength of 1:2000, was placed on the market; also a powdered pepsin of the same strength was supplied, and for the first time there appeared a solution of pepsin in glycerin called Glycerole Pepsin, of such a strength that one minim would digest 100 grains of coagulated albumin.

There was now no further change in commercial supplies of pepsin until 1893, at which time as the result of continued and rather epoch-making experiments, there were placed on the market a line of pepsins of different strengths in scale form, including 1:2000, 1:3000 and 1:4000 strength, a glycerole pepsin having a strength of 1:300 and while not regularly listed, it was arranged that supplies of pepsin having any strength up to about 1:15000 would be furnished on demand. The next year, 1894, appeared the 1890 Revision of the U. S. P. which made official a pepsin of a strength of 1:3000 and a saccharated pepsin of 1:300, which have remained to the present time as the official standards.

At the same time, with the development of the pepsin manufacture, there has gone with it hand in hand the development of methods of testing pepsin, and while the strengths of pepsin as claimed many years ago were approximately correct, they are certainly not the same as would be shown by our present day methods of assay. The pepsin supplied even up to as late as 1890 or 1893 was probably much weaker than would be indicated by our present methods of assay. The general idea of the test has not varied greatly, but our experience has increased and our interpretation of results has been modified. This is very forcibly shown by the fact that quite recently a test was made of a sample of pepsin prepared about twenty years ago and which, at that time, was considered to be 1:20000 strength. This has been kept under the best possible circumstances, so that deterioration that had occurred was certainly very little, but the test showed that it would now be considered only about 1:10000. The fact that the U. S. P. standard has not varied for almost twenty years past does not indicate that there have not been advances in this length of time for I am able to show you to-day a

sample of pepsin testing 1:25000 by present tests, which is therefore, approximately five times as strong as the pepsin prepared twenty years ago. This high powered old sample was more the result of good luck than accurate knowledge and it was practically impossible to duplicate it, but this new sample can be duplicated at any time, although, of course, the expense of making so powerful a product would be considerable, but strengths of 6000, 8000 and 10,000 are easily made.

As in the manufacture of extracts of drugs, so in pepsin manufacture the development of highly efficient vacuum apparatus has had much to do with the improved processes.

Pancreatin:—As closely associated with pepsin, we naturally think of the ferment Pancreatin. Here the development has not been so spectacular as in the case of pepsin, but it is nevertheless considerable. In 1877 a saccharated pancreatin was placed on the market, for which no standard of strength was given, there being no recognized way of determining the strength at that time.

In February, 1881, there appeared the following test which, crude as it was, attempted to give some definite information about the product; "Ten grains will emulsify ½ to 1 oz. cod liver oil with water in sufficient quantity." This test was continued as a standard until 1884, at which time a so-called "pure" pancreatin and also a liquid concentrated pancreatin were put on the market, the first of which being of such a strength that five grains would peptonize one pint of milk in half an hour, and the latter required two fluidrachms to accomplish the same results. The same standard of strength, as far as the peptonizing of milk is concerned, remains to the present day. The Eighth Revision of the U. S. P. established a starch conversion test requiring that one part of the pancreatin should be able to digest 25 parts of cooked starch.

The development of a commercial pancreatin supplied by Parke, Davis & Co. since the introduction of this Pharmacopœia has gone to such an extent that its regular product now has the ability to digest 150 parts of starch for each part of pancreatin.

Taka-Diastase:—For many years it was known that a ferment, having some digestive action on starch, was produced during the growth of various fungi. Researches, both in Germany and Japan, began to develop considerable information on this subject, and in 1895 the first medicinal application of a ferment of this kind was made, when Parke, Davis & Co. introduced Taka-Diastase as a result of the researches of Dr. Takamine. As first supplied it had the power of digesting or converting into assimilable substances one hundred times its weight of starch, but, through continued research, it has been possible to greatly increase its digestive activity, so that, at the present time, it has three times its original strength.

Capsules:—Turning now from medicinal products to what may be considered accessories in pharmaceutical practice, we would note especially the development of empty capsules. These were not original with this firm, having been first prepared in a very crude form by A. Mothes, a French pharmacist, in 1833, and first made in the U. S. by H. Planten in 1834 or 1835, but they were not recognized as being particularly valuable, and no perceptible advance was made in their

manufacture for many years, and the history of the greatest development of capsule manufacture is coincident with the connection of Parke, Davis & Co. with their production. In early years the firm did not actually own the plant, but they controlled the entire output of an associated factory, which was to all intents and purposes their own.

The first capsules which they listed were in 1875, and consisted of three sizes, what are now known as Nos. 1, 2 and 3. They were still rather crude, but an attempt was made to give them a smooth and transparent appearance, and to produce a body with cap slightly larger so that they would fit properly together, and the gelatin used was the best obtainable at that time, as at present. The novelty of the empty gelatine capsules is very well shown by the description of them in advertisements in the late '70s, such as the following: "Our capsules are composed of two small tubes of prepared gelatin, one sliding into the other, and each closed at one end. The remedy employed is then separated into the proper dosage, one of which is placed in the smaller tube, which is then telescoped into the larger. It is now in the shape of a small cylinder, ½ inch in length, ¼ inch in width, closed at both ends," or the following: "The gelatin on being moistened becomes slippery and is readily swallowed with the aid of a little water."

Though they were so little known to the pharmacist the public knowledge of them was even less, as was evidenced by an item in the Louisville Medical News in 1877, where a physician states that an intelligent gentleman had been given capsules to take without specific directions, and later informed the physician that he "did not like them at all," his idea of taking them being "to peel off the hulls and put the stuff in water."

From a very slow and laborious process, the manufacture of empty capsules has come to be one of speed and remarkable perfection, and nowhere can be found a more wonderful development of special machinery than is connected with the capsule industry. More space could be given to this alone, but for further information, which it is impossible to include here, reference may be made to the article by Warren Wilkie in the Bulletin of Pharmacy, 1913, page 382.

Biological Manufacture:—We come now to what we have called the fourth period in the development of manufacturing pharmacy, viz., the biological period, and use the term in a broader sense than it is popularly employed. In this connection one naturally thinks of vaccine for producing immunity against smallpox, but this was developed nearly one hundred years before the appearance of antitoxins or bacterial vaccines.

On the border line between medication by drugs of mineral or vegetable origin on one side, and products derived from bacteria on the other, lie a number of animal substances which modern materia medica includes, as some of its most potent agents. Substances that, to one unfamiliar with the trend of medical research through the last twenty years, would seem to savor of the necromancy of the middle ages. The results obtained from the various products of the so-called "ductless glands," have been so remarkable that they have attracted considerable popular attention, and have, in some cases, almost revolutionized the medical treatment of obscure and hitherto baffling diseases. This work, very naturally,

began first, with the use of the desiccated glands themselves, followed, almost immediately, by attempts to isolate some definite active principle. As a result of this, first, and so far, most important, there was isolated by Dr. Takamine, the active principle of the suprarenal gland, Adrenalin, which became commercially available in January, 1901. Since that time it has risen rapidly into the very front rank of important remedial agents and it needs no further statement concerning it in this connection.

As a more recent and almost equally important work, though in somewhat different line, there has come the commercial development of an extract of the pituitary gland, known by this firm as Pituitrin, and supplied first in 1909, embodying the active constituent of the posterior lobe of the gland. The exact nature of this active principle has not yet been definitely determined, but at the present time much attention is being paid to it and also to the value of the anterior lobe of this gland, for a long time discarded and considered of no value.

Along with the use of these two glands medicinally, there has come about also the use of the thyroid gland, either in desiccated form or as some especially prepared substance derived from it. The thyroid gland has been under investigation for many years and the exact nature of its active constituents is not yet understood, but there probably remains, in the future, much knowledge of this gland that will be of even greater value than that possessed to-day.

The gradual development of definite therapeutic uses for a number of other glandular products is now in progress, most prominent among which may be mentioned the Pineal and Para-thyroid glands, but what shall be the results of this, as regards the isolation of any definite active body or a thorough understanding of their uses, and the employment of them in therapeutics, is yet chiefly a thing of the future, although apparently not far distant.

What shall be the ultimate result of the study of these glandular products will remain for some historian of many years to come to set forth.

The commercial beginning of what is generally spoken of as biological work was in 1894, and the events that preceded it are worthy of a moment's notice. In 1887 Professor Sewall of the University of Michigan directed attention to the immunization of pigeons against rattlesnake venom. This is probably the first published reference to the establishment of immunity. Following this, during the next six or seven years, there appeared a number of papers dealing with the establishment of immunity against various poisons, such as ricin, abrin, etc. of vegetable origin, and toward the close of this time there came the epoch-making work of Roux, Behring, his assistant, Kitisato and Aronson. The publications of Behring and Roux really mark the beginning of the idea of producing, on a manufacturing scale, a substance that would produce immunity to diphtheria and other diseases which were of bacterial origin.

The firm of Parke, Davis & Co. early saw the possibilities in the field so opened up and in 1894 established, in a small way a department for pharmacological work and for the production of diphtheria antitoxin. The first equipment was small, and the total number of animals included a few guinea pigs for necessary tests and three horses for the production of the antitoxic serum.

Early in 1895, public mention was made of the fact that they would, in a very

short time, be able to supply diphtheria antitoxin, and by 1896 three different packages were on the market, viz., one containing 600 units, one of 1000 and one of 1500. The next year a bulb containing a prophylactic treatment of 250 units was placed on the market, and one of 2000 units.

In 1898 appeared, for the first time, a package containing 3000 units and from this time on, for some time, the strength of dosage was not greatly increased, but the effort was made to cut down the amount necessary to obtain the same potency. Very considerable advances along this line had already been made. The first serum made contained about fifty to sixty antitoxic units per cc., but very quickly the strength of the serum was increased, and it is a notable fact that one of the most potent serums was taken from a horse used in 1898, this serum being so powerful that one cc. contained 2000 antitoxic units. At that time, the reasons for this remarkable potency were not well understood, but it seems now that it was due to some unknown difference in the animal, as great variation is found in the serum that is obtained from different animals. Since that time the continued effort has been to increase the potency of the serum by concentrating it in some way after it is first obtained, as the result of which the so-called serum globulins or concentrated serum have been supplied, which now contain a very much larger number of antitoxic units.

In 1897 antistreptococcic serum, and in the same year anti-tetanic serum both in liquid and dry form, were placed upon the market. An anti-tubercle serum appeared in 1898, and in 1899 and 1900 respectively there appeared, for veterinary use, two new products, blackleg vaccine, and anthrax vaccine, which were of a different type and are more closely related to the bacterial vaccines of later development than they are to serums.

The brilliant and rapid development of bacterial vaccines is of such recent date that all of you are well acquainted with it, and there is no need to do more than to record the fact that it has its origin in the work of Sir A. E. Wright and that the first commercial preparation of bacterial vaccine was made by Parke, Davis & Co. in 1907. Since that time the number of them has greatly increased, and the development has been so rapid and is still going on to such an extent that these productions can not properly be treated in a historical paper as they have not yet the antiquity that renders them of historical nature, but are a very present and active force in pharmaceutical work.

As the latest addition to biological products for medicinal use, we come to the phylacogens which give promise of having an even more brilliant future than their precursors, the bacterial vaccines, but again these are of so recent origin that they are not appropriately treated in a paper of this type, and can only be mentioned.

In taking a general survey of the pharmaceutical industry from a manufacturing standpoint, one of the most striking developments is that of the apparatus and machinery employed and the use that has been made of machines originally designed for other industries. It is characteristic of the development of medicine and pharmacy in general that they have been quick to take advantage of knowledge gained from every available source and this has been especially true of apparatus employed.

We have already noted something of the remarkable development in special machinery in the manufacture of capsules, pills and tablets, all of which are peculiar to the manufacture of medicines, and one could very easily deal with the development of this machinery entirely apart from any of the products and processes themselves. Aside from the special machines just mentioned, probably no one thing has had so much effect on medicinal products as the great improvement in different types of vacuum apparatus in the last fifteen or twenty years. Vacuum stills for the recovery of liquids or the concentration of fluids where the solid residue is desired, vacuum dryers for the handling of products such as dry extracts of drugs or granular effervescent salts, and even the use of vacuum pumps for filtration, for the handling of liquids in quantity and numerous other minor purposes make it unusually important in a wide scope of work.

From the baking industry we have taken over the type of mixers there used as being the best for pharmaceutical processes; from the flour mill we have adapted the roller mills to be used in handling tablet granulation; from the liquor industry we have adapted stills and vacuum pans of various forms; from the laundries we have taken special types of centrifugal machines; from the sugar industry, centrifugal machines of different design for other purposes, from the manufacture of confectionery we have derived lozenge machinery and notably the type of pans for sugar-coating pills and tablets which are the same as have been used for sugar-coating nuts; from the paint manufacturers we have taken over the mills for grinding paints and put them to use for grinding ointments and have taken their automatic filling machinery for use in filling tubes of tooth-paste ointments, etc. In fact, wherever a machine has been found that could, in any way, be adapted to pharmaceutical practice, it has been done, and used as it was, or, as frequently the case, after some modifications.

It is sometimes hard for the historian to refrain from assuming the role of prophet, but it is plainly evident to all that a great change in medicinal preparations is occurring, the old galenicals in many cases giving way to products from the biological field, and it requires no seer with supernatural vision to see still greater changes in the future, both in materials and methods, and the establishment of a more potent and definite materia medica.

Laboratories of Parke, Davis & Co.

STATES HAVING RECIPROCAL REGISTRATION.

The following states now have reciprocal license privileges for pharmacists through the work of the National Association of Boards of Pharmacy:

Active—Alabama, Arkansas, Arizona, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Oklahoma, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin.

Associate—Colorado, New York, North Carolina, Pennsylvania.

Any information desired about reciprocal registration may be secured from H. C. Christensen, Secretary N. A. B. P., No. 150 Bowen Avenue, Chicago, Illinois.

THE STUDY OF THE HISTORY OF PHARMACY BY STUDENTS OF PHARMACY AT AMERICAN INSTITUTIONS OF LEARNING.*

EDWARD KREMERS.

1. The object of the course which has been given in alternate academic years for a number of years past is indicated in the following Prefatory Note to the Bibliographic Guide to the history of pharmacy which has been prepared first of all for his own students by the writer.

"As the title indicates, this brochure makes no pretense at being a complete bibliography to the history of pharmacy, much less does it presume to be a history of pharmacy. The sad fact is that we have no real history of pharmacy, indeed never have had one. However, we have a number of excellent historical treatises on pharmacy, a literature that has made excellent progress during the past two decades. Unfortunately, most of these treatises are not available to the average American pharmacist or student of pharmacy because of the foreign languages in which they have been written.

"Appreciating the broadening effect which even a cursory study of the history of pharmacy by the pharmacy student must have on his necessarily technical course of education, the writer has always sought to interest his students in the evolution of their calling. Some years ago this endeavor took on the form of weekly lectures which, so far as possible were illustrated by lantern slides. In order that the impression thus produced might be more lasting, these lectures have been supplemented by topics, some of which enabled the student to acquaint himself with important details that were, of necessity, omitted from the general survey of the lecture. This topic work also necessitated some acquaintance, on the part of the student, with the books available in the university library. Synoptical bibliographic sheets resulted as a practical expediency, and from these the present bibliographic guide. It is the hope of the writer, that in their present form these notes may prove of use not only to his own students, but also to some of his colleagues who appreciate the importance of historical study of the natural sciences by professional students."

Scope of the Course:—Our pharmacy courses being already overcrowded on the side of technical information, but little time is left for such a course as this. One meeting a week, though for both semesters, necessarily implies great restriction. Such a course must of necessity be very general and avoid all detail that is not essential to illustrate the general principles that should be emphasized.

For reasons that become apparent by reference to the brief chapter on Classification of the Guide, the history of pharmacy is taught as an aspect of the history of civilization. Hence the course of following the periods of general history is followed. In each period only such countries are selected as teach a special lesson. Thus, for the period of antiquity, Egypt, Greece and Rome must suffice; for the middle ages, the Arabians. Of the modern period, Italy and France are selected as typical Romance countries; Germany and England as typical Germanic countries.

* Abstract of paper read before the Historical Section at the Detroit Meeting of the A. Ph. A.

The first semester having been given to the study of the development of pharmacy in the old world, the second semester is devoted to the study of pharmaceutical history in the United States. The earlier developments of pharmacy in this country are traced back to the institutions of France and England, the later developments to those of Germany introduced during the second half of the nineteenth century.

In addition to these general considerations, special subjects such as pharmaceutical economics, organizations, education, etc., are studied in connection with these special chapters of the history of the United States, but in each case the beginnings are traced back to their European origin. This affords an opportunity to review some of the general aspects in their application to those special topics. Pedagogically, this is important, particularly since the line of thought involved is rather foreign to students pursuing courses that are almost exclusively scientific and technical.

Methods of Instruction:—In a course such as the one outlined, which of necessity belongs to the inspirational rather than the informational type, the lecture naturally is the dominant feature. Its object is not so much to impart fragments of information about this or that which may be directly useful to the future pharmaceutical practitioner. Its principal object is to cause the student to forget, for the moment, his chemistry and botany and to think of himself as a member of a calling, which, in one form or another, has served mankind since the beginning of civilization, and which, no doubt, will survive the storm and stress of the present and continue to serve mankind in the future. If history in general, is or should be the lamp by which our feet are guided, the history of pharmacy as a calling, rather than the history of a certain galenical with its quaint synonymy, ought to teach the prospective pharmacy student more of real value than the imperfect appreciation of chemical laws or the memorizing of doses, however, important both may be.

A lecture course of this sort, no matter how perfect the lecture or how inspiring the lecturer, is apt to induce superficiality unless supplemented by more substantial mental exercise. The topic is as essential as the lecture and when properly conducted will teach even the average American student that his fear of all that is foreign is rather foolish. There is no reason why the student should not learn directly from Scribonius Largus what constituted the *materia medica* of the ancients. From the British Encyclopedia he may get a general notion of the closed corporation, the Guild, and later the college. From similar general sources he may learn about the system of concessions, both real and personal. With the aid of an outline map of Italy, he may be taught to acquire a better understanding of local pharmacopœias, invariably the precursors of the recent modern pharmacopœias, and the close relationship between this class of pharmaceutical literature and the political divisions of humanity into states and nations. In like manner, outline maps of the United States will enable him to trace for himself the development of state associations and state legislation in this country. Moreover, weekly topics may be so assigned in the course of the two semesters, that the student is compelled to acquaint himself personally with at least those sources of historical information written in the English language.

With the modern facilities for supplementing the spoken word by visual instruction, a course of this kind would not be complete without lantern slides or similar means. Much of that which the teacher imparts in his lectures, is largely foreign to the mode of thinking of the average student concerned. The eye must come to the aid of the ear, not only to arouse the interest but to cause the spoken word to be truly understood and appreciated. The material available for this purpose is as considerable as some of it is choice, but it is not readily available even in our larger pharmaceutical libraries. While the money factor involved is by no means prohibitive, it requires love of the subject and patience to bring together a good working collection.

In connection with the reading of this paper an assortment of the different kinds of slides available was shown with the aid of a lantern kindly loaned for this purpose by Parke, Davis & Co., and operated by a member of their scientific staff. The following slides were shown:—

A. PERSONS OF SPECIAL INTEREST TO THE HISTORY OF PHARMACY.

Geber teaching chemistry.
Rhases in his laboratory.
Paracelsus.
Lemery.
Scheele monument.
Latin terms used by Scheele.
La soeur apothicaire Pierrete Monnet.
Joseph Pelletier.
Joseph Bienaimé Caventou.
Das Liebig Denkmal in Giessen.
A. B. Prescott.
Chas. Rice.

B. THE EVOLUTION OF THE APOTHECARY SHOP.

Facade of a Pompeiian house.
Floor plan of store in Pompeii.
A store for the sale of food stuff (Pompeii.)
Dispensary of the monastery Muri (Switzerland.)
Hospital pharmacy, Dijon (France.)
An itinerant drug seller (15th Century, England.)
Pharmacie Anglaise of comeinin (Antwerp, Belgium.)
Lipiciere de village by G. Dou.
Tenier: Chem. Laboratory (Dresden Art Gallery.)
Apothekerkueche des Apothekers, d'Ailly (National Museum, Amsterdam.)
Apothecary shop (From *Hortus sanitatis.*)
Apothecary shop (From J. Amman.)
Apotheke zum goldenen Loewen.
Apotheke in Heppenheim.
Hochzeitschaus, Hamelin (Sertuerner.)
Floor plan of *Farmacia Serravello.*
Kopenhagen. Environs of Kong Salmons Apothet.
Scheele's *Apotheke* in Koeping (Sweden.)
An apothecary's shop (15th Century.)
Chemist, from "Book of Shops."
S. A. D. Sheppard's pharmacy, Boston, Mass.
L. A. Seltzer's (basement) pharmacy, Detroit.
Arzneischrank, (Germanic Museum.)

C. MATERIA PHARMACEUTICA.

Distillation of mercury, sublimation of mercury.
Symbol for sulphur, distillation of sulphur.
Symbol for vitriol, preparation of vitriol.
Symbol for salt, preparation of salt (16th Century.)
Scratching of poppy head (India.)
Opium Saloon (Shanghai.)
Peru balsam.
Gutta percha.

D. PHARMACEUTICAL APPARATUS.

Balance: *Silphionhandel.*
Balance: Roman *Schwellwage.*
Balance: 16th Century.
Chest from Pyx Chapel.
Roman perfume bottles, *unguentaria.*
Unguentaria, etc.
Glass ware.
Glass ware.
Mensa ponderaria.
Mill for grinding olives.
Oil press (Herculaneum.)
Expressing olive oil (Stradanus.)
Still with barrel condenser.
Apparatus described in Adam Lonicer's Distilling Book.

E. MISCELLANY.

"Oldest prescription."
Papyrus harvest, plays and wine harvest.
Scribes with role and pallet.
"The oldest prescription known."
Formula for medicament to drive away witches.
Apprentice's certificate 1743.
Specimen of practical examinations as master apothecary (France.)
Pharmaceutical pots.
The apothecary of "M. de Pourceaugnac" by Moliere.
Coat of arms of Paris Guild of Apothecaries.
Book-plate of Pharm. Soc. of Switzerland.

Editorial

Ernest C. Marshall, Acting Editor..... 63 Clinton Building, Columbus, Ohio

THE PHARMACIST AND THE LAW.

"CALL you that backing of your friends? a plague on such a backing," was the protest of bluff Jack Falstaff to Prince Hal, and one is tempted to sympathize with him and cry out in protest, "God save me from my friends," as he reads the further suggested effort to curb and restrict the already overburdened drug-trade, as embodied in the model law proposed to supplement the Harrison Bill by Messrs. Beal, Freericks and Craig.

Have we not enough law in the Harrison Bill to satisfy any reasonable person? Is it necessary to pile Pelion on Ossa; to add law after law in further effort to declare the members of our profession, enemies to all that is good; panderers to all that is vicious, and willing instruments in the destruction of society, to protect which from their attack, wall after wall of law must be built up?

Out upon such an effort. We have enough to bear, in the Harrison Law, which every good citizen earnestly desires may accomplish much good,—the good results that are postulated, without adding more and more to our burden at the suggestion of the lawyer members of our craft.

Of all the professions in this unhappy world, there is none which brings more trouble to it than that of the law, and the less our profession has to do with druggist-lawyers the better for it.

From the days of Jonadab, "a very subtile man," who gave such foul advice to Amnon, mankind has been cursed by lawyers. Lord Chief Justice Brougham, being asked to define "a lawyer," said "a lawyer is a learned gentleman who rescues your estate from your enemies and keeps it himself." Those who have been charmed with the inimitable sea-tales of Marryat may remember that the most troublesome man on a ship was "a sea-lawyer," and we are tempted to cry out, "Oh, Lord, Lord, save us from our pharmacist-lawyers," for there is a limit to patience and the limit seems to have been reached. The tendency of lawyers is to look solely to laws as a bulwark of defence against all ills. They have no faith or trust in the inherent goodness of mankind, and by this lack of trust they do injury to all, the state and the individual citizen. Chief Justice Marshall is said by many to have done incalculable harm to this country by his construction of the Constitution, and the wrongs wrought by pettifogging attorneys have been prolific subjects for the author and dramatist, and few of us but know of some instance of their baneful deeds. It may be said, without much fear of question, that no class of men have been so dangerous, so pernicious to organized society, so subversive of all that is good in life as the legal fraternity.

Let us have done with law and lawyers for the present. Let us see what good there is, if any there exist, in the Harrison Law. Let us strive earnestly to eradicate the danger to our civilization which its exponents declared imminent. But

for Heaven's sake, let us not attempt to add more and still more law to that, until we observe its operation and effects.

"We must not make a scarecrow of the law,
Setting it up to fright the birds of prey;
But let it keep one shape, 'till custom make it
Our ward and not our terror."

E. C. M.

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WASHINGTON PHARMACY LAW.

THE law proposed in the State of Washington (H. B. No. 135) to regulate the practice of pharmacy seems to be one most excellent, and it contains one feature which might well be copied by all states which suffer from the evils of itinerant vending.

Some of the plans proposed to control or regulate this evil might be well-termed bills to legalize itinerant vending instead of bills to control it, for they are so worded as to legitimize the practice even though they impose some financial restrictions. But in the case of the Washington law the framers of the bill have attacked the evil directly. Sect. 14 of the proposed bill is as follows:—

"It shall be unlawful for any itinerant vender, peddler or any person unless he be a registered pharmacist or registered assistant pharmacist in the State of Washington to sell or offer for sale any medicine, drug, nostrum, ointment, preparation and appliance for the treatment of disease, injury or deformity."

The salutary effect of this section is somewhat, if not entirely nullified however by Section 29 of the bill which allows unrestricted selling of "proprietary medicines or medicines in sealed packages" by any one without restriction as to place or qualification. While a man who has a store is required to obtain a license from the State Board of Pharmacy, any person can sell the same goods from a basket or wagon without such license. Thus, under this law, it would appear that while a person having a real or fancied ground for action against the seller of such medicines, could reach a man with an establishment which was properly licensed, he might, and probably would, find it impossible to reach a person without such establishment.

Some means should be devised by which the public could be protected in such cases.

To allow persons who may be entirely unqualified and who may never be seen again after selling the medicine, to sell drugs for the cure of disease without restriction, while those with permanent establishments are only allowed to sell the same goods when licensed, seems inconsistent.

F. C. M.

GEORGE FREDERIC HOLMES MARKOE.

Professor Markoe was born in Valparaiso, Chili, in 1840. He was a posthumous child and spent the first ten years of his life in Chili with his mother's family. In 1850, his grandfather Markoe of Salem, Massachusetts, desired him brought to that city and the child of ten found many changes, most of them hard to bear, in the transition from the southern to the northern hemisphere. He made for himself, however, a good record at the Phillips Grammar School of Salem, and after his graduation was apprenticed in 1857 to Mr. James Emerton, a Salem pharmacist. Here he followed a course of study outlined by Prof. William Proctor, and upon the Salem Fells began the study of botany, which in later years brought him into close friendship with Prof. Asa Gray of Harvard University.

In 1861 he came to Boston and entered the employ of Mr. Charles T. Carney, whom, ever afterwards, he regarded as "My Master," and for whose ability and integrity he always retained the highest admiration.

In 1863 he entered the store of Joseph T. Brown, one of the principal pharmacists of Boston, and for eleven years was associated with that firm, the last three years as a partner. In 1873 he became proprietor of the store established by them in Roxbury, a part of Boston, in which suburb he resided for seventeen years, during which time he did much active work along chemical lines. He was a pioneer in manufacturing pharmacy, doing much in the making of chemicals and chemical solutions. Here his famous process for the manufacture of phosphoric acid by the action of bromine and nitric acid on phosphorus was evolved. He also did much analytical wo k and was consulted by many for counsel in practical methods for improvements in chemical processes. He possessed great mechanical ingenuity which served him well when in need of apparatus, of which for years his stock was small.

In 1890 he retired from the retail drug business and devoted himself to work in the Burnett laboratories and to teaching.

His early difficulties in the line of study, led him to sympathize with the apprentice of few opportunities and opened the way to what was undoubtedly the best effort of his life; the establishment of instruction by the Massachusetts College of Pharmacy, which before 1866 was an incorporated body, but not a teaching institution. In 1867 he delivered in a little room on Boylston Street, a series of free lectures on Pharmacy and Chemistry, and from that time, for nearly thirty years, he served as a Professor of his beloved College of Pharmacy, which he was proud and happy to see grow into a strong and influential institution from his small beginning. In 1870 he founded the Alumni Association, and served as its first President. No student ever came under his care who could not at any time command his help and sympathy and in the latter part of his life the recognition of his kindly and helpful assistance by many of these, was to him a source of endless happiness.

From 1873 to 1879, he was Instructor of Materia Medica in the Harvard Medical School. For nearly three decades he served on the Revision Committee of the U. S. Pharmacopœia. He was affiliated in many circles allied to pharmacy; was President of the American Pharmaceutical Association in 1875-76, and was an active member of the Boston Scientific Society, the Horticultural Society, Society of Arts, Massachusetts Pharmaceutical Association, Boston Druggists' Association, a Fellow of the American Association for the Advancement of Science, an honorary member of the British Pharmaceutical Conference and of the Royal Pharmaceutical Society of Brussels. In 1891 Dartmouth College conferred upon him the honorary degree of Master of Arts.

He was twice married. By his first wife, Ellen G. Jenness, he reared one son, George Berger; and by his second wife Louise, granddaughter of Sir Emanuel Moore, he was blessed with one daughter, Llanyd Ellis, the secretary of the large department store of E. A. Filene & Sons, of Boston, Mass.

He passed into the "Great Unknown" in September, 1896, leaving behind him the love and regard of all who knew him best, and who cherished his kindly and genial nature.

Papers Presented to Local Branches

MINERAL WATERS.*

THEIR ORIGIN, INTRODUCTION, ANALYSES AND ARTIFICIAL REPRODUCTION.

JULIUS GREYER.

Water, an inorganic body and a compound of a definite composition, Hydrogen monoxid, is itself a mineral. It is a universal solvent. An absolutely pure water is the product of the laboratory alone. From a strictly scientific standpoint we could consider all waters as mineral waters. The definition as to what should be termed a mineral water will therefore depend largely upon the point of view; that of the chemist differing from that of the physician or that of the layman.

The term mineral water as commonly used has been applied to waters containing an appreciable quantity of minerals. The definition of what constitutes a mineral water, given long ago by Doubeny, perhaps covers the ground as well as any other. He says:—"The term mineral water in its most extended sense, comprises every modification existing in nature of that universally diffused fluid whether considered with reference to its sensible properties or to its action upon life."

From the therapeutic standpoint, a mineral water is any water which may alter in any way the physiologic functioning of the human system, no matter how feebly mineralized the water may be,—or it is any water which, by its inorganic solid or gaseous constituents, exhibits or possesses medicinal virtues.

Although some waters are much lighter in mineral constituents than the ordinary potable waters of most localities, they are yet entitled to a consideration under the appellation "Mineral water," whether its medicinal virtues be due to the presence of some substance effective in small quantities, or its purity and thereby permitting large quantities of fluid to be used.

Wherever we go we find mineral springs, some of which issue quietly and peacefully from the earth, while others are forced to the surface with great violence, either steadily or at intervals, some ascend from the bottom of the sea or lakes or rivers, others appear thousands of feet above the level of the ocean. Some issue from the earth having a temperature near freezing, others near the boiling point, some after reaching the surface of the earth are so heavily laden with matter as to cause crystaline, calcareous and other deposits or precipitations.

The origin and nature of springs depend beyond any doubt upon a leaching process occurring under the influence of atmospheric precipitations, rain water. As water passes through rocks or mineral deposits, it continually leaches out all

* Read before Cincinnati Branch, January 12, 1915.

soluble substances on its way to the interior of the earth, until it reaches the impenetrable layers of clay. Here it meets with other waters which may have traveled great distances through other channels or arteries, having leached other and different strata and consequently dissolved other and different substances. These waters then by hydraulic action or by the pressure of gas as the case may be, are again forced upward, passing through possible new and various strata, and again they may become active, interchanging and possibly again depositing new precipitations of matters which have become insoluble. When finally the water reaches the surface of the earth it either emanates in a quiet peaceful flow or is driven upwards with more or less, and often very great, force. In the formation of mineral waters the vast number of combinations and their operative factors always correspond with the variety in composition of natural mineral waters.

The physiological properties of mineral springs, although replete with wonders to the uneducated, have attracted the attention of scientific men from an early period. Supernatural properties have been ascribed to springs; strange stories propounded regarding their origin and tales and fables were spread regarding their wonderful powers and miraculous effects. Even to this day we find proprietors or owners of springs advertising and claiming supernatural powers and properties for their waters, but, thanks to advanced science, our Government now stops this whenever aware of such tactics.

To illustrate some of the ways of advertising I have a few of the most interesting labels and pamphlets with testimonials.

From a pamphlet of The Kentucky Carlsbad Springs Co., Dry Ridge, Kentucky, we read as follows:—

"The water cure is certainly the most acceptable way to take medicine. Any physician will tell you, after he sees the analysis of the Kentucky Carlsbad Water, that it contains every medicinal quality necessary for the cure of the diseases herein specified. We will take the albumen out of your water in three days. We will give relief of the most severe case of kidney trouble in one day and will absolutely cure any case in ten days. Stomach trouble will be relieved in twelve hours and we will guarantee it to cure any case in the world in ten days, if it has not become cancerous. Bladder trouble of any kind will be cured in ten days. It will cure any old sore by bathing in it two or three days, and if you have any catarrh, heat the water and douche it up the nose on the sore spots and in one week you will have no catarrh. It will cure any sore it comes in contact with and this is the reason it cures stomach and sore kidneys and bladder as it comes in contact with these organs."

The same Company publishes the following testimonial:—

"To whom this may concern:

I will say that I am seventy-six years old, and have had albumen in my urine for five or six years, so much so that a layer would form in the bottom of the chamber in which I urinated, but after a stay of five days at the Kentucky Carlsbad Springs my urine was perfectly clear and no signs of albumen could be seen. At the same time, I had my wife there, who had not walked for four years, and in seven days she was walking. I would sincerely recommend the water as wonderful and beyond what words could express."

I herewith present a label of the Partagas Lithia Spring Water. In the analysis made by C. T. M. Marsh and which is published on the label, no mention is made whatever of any lithia, but this does not prevent this concern to market the water under the name of "Partagas Lithia, The Autocrat of Waters."

Another label of The O. J. Ferris Springs, Plainville, Ohio, reads,—"Crystal Fountain Springs. Purest and best Table Water."

A label of The Isham's Springs of Life Company, San Diego, Calif., reads as follows:—

"Isham's California Waters of Life. The World's Wonder. They possess miraculous power to destroy disease and actually rejuvenate humanity by dissolving and evacuating calcareous old age matter and microbes. The worst forms of costiveness, kidney, stomach, skin troubles, even cancers and gall-stones yield to its marvelous power. Persons troubled with obesity or emaciated victims of excessive use of liquor, tobacco and opium, involuntarily return to a normal, healthy condition and grow strong without a drooping of the spirit. With the new life comes the bright eye, elastic step and a new growth of luxuriant hair."

Another type of existing mineral waters which I have not yet mentioned, are those collected from wells which are dug. To this class belong the various Hungarian Bitter Waters, the Hunyadis, Apenta and others. Hunyadi Janos, for instance, is collected in the Kehlenfeld, consisting of a bed of marl lying in a flat valley between the Adlerberge or mountains. By digging holes, say from 10 to 20 feet deep, the water collects in these wells in a more or less concentrated form, which is dependent upon atmospheric conditions and precipitations. From these wells Hunyadi Janos is pumped into large cisterns and mixed with water from a well yielding a lighter or heavier concentration, until it shows a certain specific gravity, and in this way it is claimed by the proprietors, the Saxlehners, Hunyadi Janos is always of the same composition, a claim which may be characteristically correct, but it is certainly *not* so chemically. So here we are, Hunyadi Janos today is a mixture of about 128 or more wells, owned by the Saxlehners, and among which are those which in former years were marketed by their owners under such names as Hunyadi Arpad, Miclos, Lajos, Lazlo, Joseph, Sandor, etc., etc. They have mostly been acquired since by purchase or otherwise by Saxlehner with the intention of monopolizing the Hungarian Bitter Water Industry.

The success with which a great many mineral water concerns have met and whose waters have become renowned and are marketed all over the world, has been an inducement to many a man owning a spring, the water of which may have exhibited one or another peculiarity, effect or character, to start a spring company, bottle the water and flood the market with their output, advertising matter, testimonials, etc., etc., but the greater majority soon pass into oblivion. You probably remember Ballardvale, Tuckahoe, Navahoe, all lithia waters which have recently died a natural death and upon which large sums of money have been expended. There are thousands more like them.

For a proper and effective introduction of a mineral water it is necessary to ascertain its composition by analysis. This establishes its nature, virtue, character and possible therapeutic value. In fact all mineral waters are to-day introduced by bringing the results of the analysis to the attention of the medical profession. Proper medical application and careful observation afterwards, will then reveal the true medicinal value of same.

What druggist has not met the man who came to him, bottle in hand containing water from the spring of his farm or his ranch? According to his story, he thinks himself in the possession of a veritable fountain of youth, the water having effected some of the most remarkable and miraculous cures and is known to have saved the lives of quite a few who had been afflicted with some incurable disease. If nothing more, it certainly cures kidney and bladder troubles.

Our man, I will call him farmer, like all farmers with a keen eye for money,

already imagines himself the president of a large Spring Water Company; he thinks of the bottling as well as of the advertising of his already renowned water, but more so of the profits which he might be able to make at so much per gallon and costing nothing.

Our farmer having gathered advices from others, is already aware of the fact that to introduce his spring water to physicians, an analysis is of vital importance, then, too, it also impresses the public most favorably and, of course, it is a very able judge of analyses.

The first step has been taken by Mr. Farmer to procure a chemical analysis. The chemist, in many instances of doubtful ability, for the sum of $10 or $20, furnishes the required article, and this is to some extent an explanation why we come across analyses of waters which are absolutely unreliable and some even ridiculous.

In looking up analyses of one and the same water, but made by different chemists, we often notice great differences in their results. One chemist finds a water to contain ten or twelve different salts while the other reports but four or five, yet both chemists may be right, both may have found the same quantities and kinds of acids and bases. The only difference I may say is, that the one chemist has apparently furnished more for the money than the other.

You all know that, in analyzing, we ascertain the kind and quantities of the acids and bases contained in the solution, in our case this being the mineral water in question.

Now then, say both chemists have found the same acids and the same bases in exactly the same quantities, the one may have followed an accepted norm in building up the combinations, while the other combined the acids and bases found, to suit his fancy or in some sort of a haphazard way. By chemists having followed their fancies more than their reasons, the grossest mistakes, yes, absolute impossibilities, regarding the nature of mineral waters have occurred.

It is a difficult matter to compare the work of two chemists and their analyses of one and the same water without laborious re-calculation.

Only of recent years, advanced chemists have adopted a certain norm in combining the results of their analyses of mineral waters, this norm was originated and used by Bunsen, Fresenius and others.

An effort is now being made and conducted jointly by committees of the American Chemical Society, the American Public Health Association and the Association of Official Agricultural Chemists to formulate standard methods for the computations of water analyses.

The statement of an analysis in hypothetical combinations, is evidently a mixture of fact and opinion, ordinary chemical tests reveal but little regarding the chemical composition of mineral waters, therefore the exact amounts of the different salts in solution in a mineral water are largely conjectural; although salts are present, it is a mathematical impossibility to apportion correctly the found quantities of acids to those of the bases, or *vice versa*.

This lack of definite information enables one to follow pretty much his own imagination, and there are many opinions as to how the acids and bases should be combined.

We know that one acid has by far a greater affinity for a certain base than

another. We also know that in the formation of salts, whenever two substances or two solutions of salts are mixed and that whenever such two solutions contain such salts as are liable to form an insoluble compound or a salt which is insoluble, such a salt is formed absolutely.

A solution of Barium Chloride and a solution of Sodium Sulphate when mixed will always form Sodium Chloride, the soluble, and Barium Sulphate, the insoluble salt, and this totally so, if the solutions are mixed in proper molecular proportions.

Knowing this, is it not reasonable, therefore, that as solutions, (mineral waters in this case) contain different acids and bases, that we should assume that the latter are combined in the solution in the ratio of their solubility in water?

A mineral water just emanated, has left all insoluble substances in the ground. In the course of its travel to the surface, it has undergone many changes; it has formed many precipitates and has left them behind. The chalk, gypsum and talcum beds found in nature are the results and the proofs of such ever-occurring precipitations.

Mineral waters, generally, come to the surface of the earth in the form of a clear, brilliant, sometimes bubbling and sparkling and sometimes foul-smelling solution and a "solution" is just what a mineral water is. Now then, is it not reasonable that,—since precipitates or matter which could not be held in solution by the water or which by interchange became insoluble and have been thrown out and left behind,—we assume that those salts least soluble in that solution or mineral water are ready next to also precipitate by the slightest physical change? It certainly is.

This is one of the reasons why Bunsen, Fresenius and other reputable chemists, in considering the results of their analyses, begin with the calculation of the least soluble substances or salts first, advancing to those whose solubility is greater and close with those most freely soluble in water.

In consequence of this the following approximate succession originates: Aluminum, Silica, Barium sulphate, Strontium sulphate, Ferrous carbonate, Manganous carbonate, Calcium sulphate, Calcium carbonate, etc., closing with those whose solubility is very great as, for instance, calcium chloride, sodium bromide, calcium iodide, etc.

Right here I want to mention the name of Dr. F. Raspe, a man who devoted almost a lifetime to the bringing of order out of the chaos of existing analyses of well-known mineral waters from all over the world. Raspe has re-calculated no less than twenty thousand analyses which means that now, these analyses can be compared intelligently, because the differences in the composition of the waters is clearly marked.

Dr. Raspe undertook this enormous task mainly in the interest of the manufacturers of artificial mineral waters.

Like everything else in this world, so has the manufacture of artificial mineral water its history.

Pliny, more than 2000 years ago, observed that "Waters are of practically the same nature as the earth through which they pass."

The first experiments to artificially reproduce a mineral water are said to have been undertaken by Thurneiser in the year 1560. This was before the discovery

of carbonic acid by Van Helmont, 1624, but his results were as poor as those of R. Hoffmann in 1685 and of those of Geoffroy in 1720.

In 1750, Venel, a physician of Montpelier, proposed the dissolving of carbonate of soda in hydrochloric acid and water in a closed bottle and by this method to impregnate the resultant solution of sodium chloride with carbonic acid gas. Finally in 1767, Bewley showed a way to produce carbonic acid gas in a separate apparatus by which he was enabled to impregnate water contained in another vessel with this gas, a method which was soon improved and followed by Priestley, 1772, Lavoisier, 1773, Noll, 1775, Magellan, Corvinus, VanChaulnes and Tobern Bergman, 1777, and others. Bergman, in 1774, had already set up the principle that if to water be added the ingredients found by analysis in proper form and quantities, a water identical with the natural water should result, and it was he, who pointed out the fact that the refreshing taste and exhilarating effects of a sparkling or effervescing water is due to the carbonic acid gas dissolved in it.

After Bergman, the interest in artificial mineral waters became very generally recognized in France, England, Switzerland and Germany.

In 1780, Duchanvy in Paris published the first book on the manufacture of artificial mineral waters.

In 1787, Meyer of Stettin, Germany, manufactured carbonated waters in large quantities.

In 1788, Paul & Gosse in Geneva constructed the first intermittent mineral-water apparatus.

In 1798, the same Paul founded the first mineral-water factory in Paris, and Pierre Fiquir in Marseilles in 1800, and after these followed Schweppe in London, Fries in Regensburg, etc.

Artificial mineral waters in those times were yet imperfect products, because chemical science had not reached its present knowledge and the apparatus were of very primitive construction. These were also the main causes for artificial waters being discredited and the ideas advanced that natural waters were peculiar products and of a nature which could not be artificially reproduced.

Within the past seventy-five years, however, it has been possible to produce artificial mineral waters of absolute perfection. Bergman, Berzelius, Bischof and Struve had pointed out that the composition of natural mineral waters depends upon the amount of carbonic acid and other gases which are dissolved in the water and upon the rocks and strata which they permeate and upon which it acts, and it was Struve who proved this by direct experiment.

Struve selected for his first experiment the acidulous alkaline Joseph Spring of Bilin, Bohemia. He filled a metallic cylinder of about six feet in length with a mixture of powdered quartz sand and klinckstone both of which he took from the ground of the Donnersberg in the immediate neighborhood of Bilin, and subjected this to the action of carbonated water under pressure, he thereby succeeded in producing an artificial water identical in composition with the Joseph Spring.

Struve followed this experiment in a like manner in producing artificial Carlsbad and Friedrichshall, both of which Faraday and Liebig pronounced identical in chemical composition and physiological and therapeutic action with the respective natural waters of these springs.

It is an undeniable fact that the honor to have by his efforts overcome all technical difficulties and to have placed that which had previously been considered unattainable, upon a scientific basis, belongs to Dr. Struve. It was he to whom thanks are due for having produced the first identical reproductions of mineral waters correct in chemical composition, in physical properties and in therapeutic effects and he is therefore deservedly called the father of artificial mineral waters.

Another fact which I want to mention, in connection with the introduction by him of his scientifically prepared mineral waters, is that his efforts accomplished most towards revealing the actual nature of mineral springs and their waters, and that, through his knowledge and scrutiny, many spring and natural mineral waters have greatly profited, inasmuch as their real therapeutic value and their proper application became known among physicians as well as to the public.

Friedrich Adolph Struve, Doctor of Medicine and owner of the Salomonis Apothecary in Dresden, Germany, was born May 9, 1781. After devoting the greater part of his life to his studies in the interests of both the nature of mineral waters and that of the manufacture of artificial mineral waters, he died September 29, 1840.

Struve's first artificial mineral-water institute was opened in Dresden in 1820; this was followed by one in Leipzig, another in 1823 in Berlin, one in Brighton, England, in 1825, and others in Germany, England and Russia, all of which were under his direction and that of his sons. Since then the number of factories increased rapidly, so that in 1877 there had been over 700 of them established in Germany alone.

In America the manufacture of scientifically prepared mineral waters such as are true reproductions of the respective natural springs, is still in a much neglected condition. Very many manufacturers, even at the present time, are using as their unit of measure, in compounding their waters, an ordinary shovel. Others which are more progressive and who at least try to be honest, buy mixtures of so-called mineral water salts, under the various names of springs from manufacturers or supply houses, which, however, at most, furnish but extremely poor results for such salts cannot claim to be anything near to being true representatives of natural springs. It is impossible to compound or to produce true artificial mineral waters from any mixture of water-soluble salts, because such waters contain also substances which are ordinarily insoluble in the form of a salt.

The credit of being the originator of scientifically produced artificial mineral waters in America, belongs to Dr. Carl H. Schultz, who started their manufacture in New York in 1862. Schultz was followed by Dr. Emno Sander of St. Louis and W. T. Wagner's Sons of Cincinnati. These establishments have chemists to compound their waters and have made a name for themselves and their products, and I express the hope that inasmuch as there are very great opportunities outside of New York, St. Louis and Cincinnati, others may soon follow in the uplift of this industry.

It is the duty of a manufacturer of artificial mineral waters to compound his waters in such a manner that when his product is finished, it will conform exactly to the analysis of the respective spring. All and even the minutest quantities of

the various salts shown in the analysis of a water should be taken into consideration by him and should be one of the component parts of his product; nothing should be left out, even if it be considered superfluous or inert.

It is true and it cannot be denied that the salts in a natural mineral water are not always combined exactly in the manner as stated by chemists in their analyses, but this has no bearing whatever on the product of a compounder of an artificial mineral water.

It is entirely immaterial, for instance, whether a chemist or analyst, in his analysis, denotes one molecule sodium sulphate (Na_2SO_4) and two molecules potassium chloride (2KCl), or one molecule potassium sulphate (K_2SO_4), and two molecules sodium chlorid (2NaCL). It is also immaterial whether a solution, or in this case a mineral water, contains these substances as such, meaning as actual salts or as molecular fragments (ions). The artificial product, whether made by dissolving either one molecule sodium sulphate (Na_2SO_4) and two molecules potassium chloride (2KCl), or by dissolving one molecule potassium sulphate (K_2SO_4) and two molecules sodium chloride (NaCl) in water, will contain the same ingredients, the potassium and the sodium as bases and the hydrochloric and sulphuric acid, as acids, in precisely the same quantities and form or forms as in the natural product because they are bound to follow and do follow the same natural laws in one, the natural solution (the mineral water), as in the other, the artificial solution.

Another example:—If we make a solution of proper amounts (the molecular weight) of potassium bromide (K Br) and sodium chloride (NaCl), in distilled water, we will get the same result or exactly the same product as by dissolving (the molecular weight) of sodium bromide (Na Br) and potassium chloride (KCl) in an equal amount of distilled water. Both solutions will have the same action, therapeutically, physically and chemically.

The natural-water men who have been fighting all these years and have tried their best to discredit scientifically-prepared mineral waters, have, to this day, failed to prove the slightest physical, chemical or therapeutical differences between the natural solution of salts, the natural mineral-water, and the scientifically-prepared solution of salts, the artificial mineral-water.

In the manufacture of true artificial mineral waters every ingredient is added to the water in a soluble form, all precipitates which are formed by the mixing of the solutions, are redissolved by and under the presence and pressure of carbonic acid gas.

If the various acids and bases contained in either, the natural and the artificial solutions, agree quantitatively and qualitatively, then as said before Nature will absolutely follow or apply the same law to one as it will and does to the other. Both solutions have been proven to and do act alike physically, therapeutically, chemically and electrochemically; they are absolutely identical in every sense of the word and this in spite of all assertions to the contrary as made by those interested and more especially, financially interested in the natural mineral-water industry.

The following illustration given by Dr. Raspe shows what may, at first sight, appear to be the analyses of three entirely different products or composition, or the analyses of three waters entirely different in composition.

These analyses do not seem to agree in the slightest, yet they have exactly the same value.

	10000 Parts		
	A	B	C
Sodium Chloride	3.297	5.846	
Calcium Chloride	2.418		5.546
Sodium Sulphate	1.035		1.775
Calcium Sulphate	0.708	1.700	
Sodium Bicarbonate	2.178		5.625
Calcium Bicarbonate	3.310	5.400	
	12.946	12.946	12.946

A. Represents an analysis and an application of acids to bases very generally found, in which the chemist has followed no particular norm, but simply his own fancy. With a greater number of elements, the complication would naturally be greatly increased.

B. Represents the same analysis as does A., but in another form, that of the so-called Normal Analysis as adopted by Dr. Raspe and who follows, with but few exceptions, the principles of Bunsen, Fresenius and others.

C. Represents a re-calculation by Raspe in the soluble form, the form which is necessary for the manufacturer of mineral waters.

If you will take the trouble to calculate the quantities of the elements or if you like, the acids and bases contained in either A., B. and C., you will find them to agree perfectly.

It is a fact also that, if you will compound a solution in water so as to contain in 10,000 parts, the amounts of elements, or of acids and bases or their equals in salts, in proper quantities, as given in either A., B. or C., you are bound to get the same results, because the natural laws of changes and interchanges of the ions or molecules in solution will apply themselves to the one solution as to the other. It is experimentally proven as mentioned before, that salt solutions, formed by different salts but corresponding to the same Ionic table, have the same physical properties.

Many controversies have been carried on between those balneologists who speak in favor of natural mineral waters and who claim a superiority for them, and those scientific men who declare themselves in favor of and who prefer and recommend the use of scientifically-prepared artificial mineral waters; especially does this preference apply to the bottled and shipped natural waters as found in the market, which often, are quite aged before they reach the consumer.

It might be interesting to you to listen to the words of a few authoritative men opposing the contentions of those who, in their arguments against artificial mineral waters, claim that man cannot produce anything new in nature by artificial means nor produce artificially such a thing as an artificial mineral water. In doing this I wish to call your attention to the fact that the opponents of artificial waters lay special stress upon the unknown substances and the hidden powers contained in natural waters and which they say chemists to this date have not been able to detect.

Dr. Wachter (Heidelberg) says:—"Does not man by use of reason and choice selection breed animals, does he not bring thousands of plants in close contact with each other for the production of a new heretofore unknown species? Yet no-

one will assert that he is the real creator of the newly-acquired result of the cross-breed. As every one may know, fluid water is composed of two gaseous elements, oxygen and hydrogen, a mixture of which gases can be brought to unite by but a weak electrical discharge into a fluid form,—into water. Now, no one will assert that this water, seemingly produced by man (the artificial), is different from the atmospheric or terrestial (the natural water). No one will doubt that it is water at all because the coarsest reasonable conception will enable one to identify it as such."

Dr. Max Roloff of the University in Halle says:

"Wherever physical chemistry has been treated with knowledge and logics and has not been pressed into the service of water-advertisements (Brunnenreklame), there is not the slightest point to show a principle of physical or chemical difference between artificial and natural waters. Has not the surrogate manufacturer just the same right to assert that his product surpasses the natural spring because it does not contain those harmful mysterious impurities? Further, I have never found that a spring was recommended because of the curative power of the unknown ingredients, the therapeutic effects were always founded upon the known and, in proven quantities, present salts and because of these quantities compared with similar springs. The balneologists then, do not themselves believe in the action of these mysterious matters, these only serve as an argument in fighting competition."

Prof. Carl Ernst Bock, of Leipzig, in speaking of artificial mineral water, says:—"Artificial mineral waters take the place of the natural mineral waters in every respect, although many physicians are prejudiced against the former."

Dr. W. Jaworski, Prof. int. med., University, Krakau, says:—"The scientific investigation so far has not been able to prove any specific properties in mineral waters which were not also possessed by the artificial solutions. Both salt solutions follow the same natural laws. The contrary assertions are spread for reasons of personal interests. . . . There is no proven difference to be found in the action of the artificial salt solutions and the mineral waters upon the system. The experimental investigations have not been able to prove a difference, but on the contrary, they have proven the identity in action of the natural and artificial salt solutions. . . . The natural mineral waters are crude products (*Medicamenta cruda*) of accidental composition, which, in modern therapeutics, may be placed among the many obsolete products of nature."

In conclusion, I, herewith, give another quotation from Dr. Wachter. . . . "The manufacturer has done his duty as soon as he proves that his artificial water agrees with the natural water in every way in chemical and physiological respects, and it is, as soon as he has fulfilled these conditions, a deep re-acting wrong, if physicians and laymen assert that a proven difference exists between the spring waters and that produced in the laboratory, while they are at the most entitled to say:—'It is possible that a difference exists, but that it is not detectable with our present analytical means,' and never was a physician in the position to maintain of an artificial water which fulfilled the requirements of a chemical analysis, that the artificially produced water has a different action upon the system than the natural, but you always hear them say, 'I take it for granted that they act different because they are not natural." . . .

RESTRICTIONS IN THE DISTRIBUTION OF POISONS.*

CARL T. BUEHLER, PH. G.

There has been so much written and said about restrictions in the distribution of poisons, and yet, we seem to be at the starting-point. I think it is the duty of every pharmacist to take an active part in the operation of our pharmacy laws, and if they are not satisfactory, then we should decide what we want and all put our shoulders to the wheel and work until we get a pharmacy law that is of mutual benefit to the pharmacist and to the public.

The following paper contains only an individual opinion regarding the poison law, but I will be pleased to hear remarks and suggestions.

I am in favor of two schedules:—Schedule A. and schedule B. Schedule A. to contain a list of habit-forming drugs and abortifacients, their sale to be restricted to physicians' prescriptions only, and in no case should these prescriptions be re-filled without an order from the physician.

The physician should not be allowed to dispense in his office or elsewhere, any drug, chemical or preparation enumerated in Schedule A., but in all cases he should be required to write a prescription for them; this prescription to be filled by a licensed pharmacist.

To prohibit the pharmacist from the sale of habit-forming and abortifacient drugs, and to permit the physician to dispense them, does not put a stop to the evil. There is no more justice in this, than there would be for a mother who has two sons, to teach one that it is wrong to dance, and to make a dancing-teacher of the other. This would not stop dancing. Neither will the illegitimate sale of habit-forming and abortifacient drugs be stopped as long as a tight rein is held on one person and a loose rein on the other. A "dope fiend," as he is called may go to a drug-store to get some "dope," and be refused; then he goes to a dispensing physician who accommodates him. Who does the public blame for this sale? I will leave this question for you to answer.

Any physician doing business as a pharmacist, should not be permitted to fill the prescription he writes for a drug, chemical, or preparation enumerated in Schedule A., but at all times some other licensed pharmacist should do the compounding and dispensing.

Schedule A.:—Hydrocyanic Acid, Opium, and all preparations of opium containing more than two grains to the ounce; Morphine, all salts of morphine and all preparations of morphine, containing more than one-third grain to the ounce, with the exception of Dover's Powder; Cocaine, all salts of cocaine and all preparations of cocaine; Codeine, all salts of codeine and all preparations of codeine containing more than one-half grain to the ounce; Chloral Hydrate, all preparations of chloral hydrate; Heroin, all salts of heroin and all preparations of heroin; Beta-Eucaine, Beta-Eucaine Lactate; Ergot, Veratrum, Cotton-Root, Savin and all its preparations.

Nothing in Schedule A. should interfere in the treatment of emergency cases

* Read before St. Louis Branch, November.

by physicians or the selling of any drugs, chemicals, or preparation by a pharmacist to physicians, or the sale among manufacturers, wholesale druggists and pharmacists, or the sale of hypodermic tablets to dentists, graduate nurses or nurses in training.

Schedule B. to contain a list of poisons not enumerated in Schedule A.

Schedule B.:—Aconite, Belladonna, Colchicum, Conium, Nux Vomica, Cantharides, Digitalis, Henbane, Cannabis Indica, Stramonium, Gelsemium, and their pharmaceutical preparations. Arsenic and its preparations. Mercury and its salts with the exception of Calomel. Zinc Sulphate, Cyanide of Potash, Oil of Bitter Almond, Croton Oil, Chloroform, Ether, Carbolic Acid, Oxalic Acid, Strychnine and its salts, Elixir Iron, Quinine and Strychnine, Potassium Hydroxide, Sodium Hydroxide, Paris Green, Spirit of Nitroglycerin, Wood Alcohol, Denatured Alcohol, Mineral Acids, Iodine and its preparations, Lead Acetate, Potassium Permanganate, Cresol and all preparations of Cresol, Silver Nitrate, Tartar Emetic, Oil Mustard, Bromine, Formaldehyde Solution more than two *per cent.* in strength.

All drugs enumerated in Schedule B. must be recorded in a poison register similar to our present Missouri law requirements for Schedule A. An entry should be made, stating the date and time of sale, name and address of purchaser, male or female, name and quantity of poison sold, the purpose for which it is supposed to be used and the name of the dispenser. The container should be labeled with the name of the article, the word "Poison," and the name and address of business of the seller. Such book should always be open for inspection to proper authorities, and the register to be preserved for at least five years after it has been filled. Nothing in this schedule should apply to the dispensing of poisons in not unusual quantities or doses, by the pharmacist upon the prescription of a physician or upon the prescription of a dentist for mouth washes. Nothing in this schedule should be so construed as to interfere in the sale among manufacturers, wholesale druggists, pharmacists, physicians and dentists.

Should the physician be allowed to dispense articles enumerated in Schedule B., provided he keeps a record similar to that of the pharmacist? Or, should be be allowed to dispense these poisons as he is doing to-day, without keeping a record and without labeling the container, stating the name of the poison or directions for its use?

In my opinion, as long as physicians are permitted to dispense, a practicing physician should be permitted to dispense to his patients any article enumerated in Schedule B., either alone or in a compound, by first making an entry in a book kept for that purpose, stating the date, name and address of the patient, name of poison, alone or in compound, quantity dispensed, quantity in each dose, number of doses. The container should contain the name of patient, directions how to be used, name and address of physician.

Schedules A. and B. have reference to original and broken packages, sealed and unsealed packages.

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-Second Annual Convention

SHOULD THE RETAIL DRUGGIST MANUFACTURE HIS OWN PREPARATIONS, OR BUY THEM?

CHARLES J. CLAYTON.

This is a problem that can be solved in almost as many ways as there are retail druggists, for the answer depends upon the conditions surrounding each one, who must decide for himself, according to those conditions.

To the true pharmacist, the making (the creating) of his own preparations is the breath of life, and he will, if necessary, sacrifice both time and profit to the gratification of his desire in this direction.

However, in this day and age, true pharmacy, unmixed with commercialism, is hard to find, and commercialism decrees that our preparations shall be produced at the lowest cost commensurate with first quality, and it may, and often does happen, that some one else can be employed to do many things for us more cheaply than we can do them ourselves. If then, we are justified in employing some one to do these things for us in our stores, where the facilities for good work are often lacking, may we not be equally justified in going a step farther by the employment of coöperative manufacturing enterprises, or the purchase of our preparations from some reliable manufacturing house? Surely, there would be nothing unethical in this, and it may well be that in many instances, by reason of the facilities that these houses have for securing the best qualities of crude drugs and for assaying the finished preparations, the latter would more nearly conform to the standards set by the authorities. Then, too, it has been my experience that a large proportion of drug clerks,—even though they may be registered and graduates in pharmacy,—to whom the manufacturing work in the store falls, are either incompetent or careless of results

So, in order to be sure of good results, the employer must, in many instances, either do the work himself or exercise a close supervision over those who do.

Even in the case of such preparations as are almost universally made in the stores where they are sold, we are reminded occasionally of the need of supervision, the following instance occurring to me recently:—During the temporary absence of my clerk, a relief man was employed, one who was registered, and who had conducted a store of his own for a number of years. He called my attention one morning to the fact that he had started to make some solution of Magnesium Citrate, saying that he did not know whether he was making it according to my way or not. On being asked if he had followed the U. S. P. formula, he said he didn't know; he had put in two ounces of magnesium carbonate and four ounces

of citric acid for six bottles. His attention was called to the fact that considerable more of these articles were needed to make it right, and he was asked if he had added the syrup and flavor, to which he replied, "No, what flavor do you use, Vanilla"?

He stated that he had found his formula in the last store that he had owned, and had been using it ever since, without a thought as to whether it conformed to the standards or not.

I have seen a percolation-process performed by pouring a menstruum repeatedly through a loosely-packed or entirely unpacked drug, and I have seen a finely-ground drug packed so firmly that percolation would involve a matter of weeks, while the percolator was left uncovered for the admission of dirt and to allow the loss of alcohol by evaporation.

Of course, these are extreme instances, and I do not, because of them, advocate buying everything. On the contrary, I advocate making everything that we can ourselves, and for my own part, I buy very few preparations. Neither do I mean to reflect too severely upon the ability of the clerks, who, in the average store, are chosen more for their ability as salesmen than for any other reason, and it is unfair to expect that they shall have all the desirable attributes in addition thereto. Moreover, the employers are not materially their superiors in these matters.

Then, too, no matter how competent we or our assistants may be, there are some things that it seems to me, we cannot afford to make ourselves, because of the time involved in their preparation. I would cite Seidlitz Powders as an example. The cost of the materials for a gross of these is something over $1.20 while they can be bought, guaranteed U. S. P., for $1.40.

I believe that a pharmacist's time is worth too much to spend it in weighing, mixing, dividing and folding 288 powders for a saving of less than twenty cents, even though he may have nothing better to occupy his attention than the perusal of the pharmaceutical journals. However, having bought your seidlitz powders, a very decided saving can be made by packing them yourself, a small investment in envelopes, cartons, boxes and labels, sufficing to take the place of a large stock of finished packages. Another item upon which no material saving is made, is in the filling of capsules of quinine, the difference on the two-grain size amounting to only about fifteen cents per thousand. Of course, if one has a boy who must be kept busy in order to keep him out of mischief, it may pay to do even such things as these, rather than to depend upon the manufacturer.

To sum up, there are the following arguments in favor of purchasing many preparations:—First, a saving of time, which if considered at its true value, would frequently mean a saving in cost as well; second, an assurance of a preparation skilfully prepared, and conforming to the required standard.

At this point, however, I would call attention to the necessity of specifying exactly the preparations desired and a careful inspection of the labels; for the most dependable manufacturers have their favorite formulæ for many preparations, claimed by them to be superior to their official counterparts, and these special preparations are likely to be sent unless careful specification be made. These may be, as claimed, superior to the U. S. P. and N. F. products, but where there are two or more formulas for an article bearing but one name, and when these

differ materially in their content of a potent drug, there arises the danger of overdosage, due to the patient becoming accustomed to a weak preparation, and later being furnished with a stronger one, and not knowing of the change, continuing the same dosage. Even if no actual danger were the result of this, the different strengths of the various preparations dispensed under the same name, results in uncertainty of effects, and a consequent loss of faith by the prescriber in the efficacy of drugs, and may be a leading reason for the abandonment of their use.

In favor of making our own preparations it may be said:—first, in most instances there is a material saving in the cost; second, preparations can be made in such quantities as are justified by the demand, so that they are less likely to become deteriorated by reason of age; third, if U. S. P. and N. F. formulæ are followed, the lack of uniformity due to varying private formulæ, however good the latter may be, is obviated, and identical preparations will be dispensed everywhere; fourth, this is a part of true pharmacy, which no man who loves his profession would willingly abandon.

No doubt other reasons, both *pro* and *con*, will occur to the minds of my auditors, but I have said enough to show that there are two sides to this, as there are to most questions.

SOME PHARMACEUTICAL NOTES.

WILLIAM R. WHITE, PH. C.

Oleate of Mercury, U. S. P.:—This when kept in glass ointment jars for a month or more, will discolor on the top. By covering the surface of the oleate with distilled water and adding hot paraffine until a thin layer is formed when cold, the oleate can be kept for a long time without change.

Spirit Etheris Nitrosi:—Practically, all of the Spirit of Nitre dispensed by pharmacists, is made by diluting one pound of the concentrated spirit with twenty-one pounds of cooled alcohol. This concentrated spirit is very volatile and boils at about 63° F., and unless manipulated very carefully some of it will be lost by evaporation. This loss can easily be avoided by cooling both alcohol and concentrated spirit, inserting a champagne tap in the cork of the nitre bottle, attaching a glass tube to it by means of a small piece rubber tubing and, after inserting the glass tube in the alcohol, opening the cock of the champagne tap and inverting the nitre bottle. If a hole is made in the stopper of the alcohol bottle and the glass tube snugly fitted into it there will be no loss. The writer believes that faulty manipulation is the cause of so many samples of Spirit of Nitre being reported below standard by the inspectors.

Fowler's Solution.—This preparation is made by boiling arsenic trioxide and potassium bicarbonate in a concentrated aqueous solution until the arsenic is dissolved, adding the remainder of the water and the color.

The U. S. P. says that when pot. bicarb. is heated to this temperature, it is converted into the carbonate which is more alkaline than the bicarbonate and consequently it dissolves the arsenic more readily. This being true, why not use the carbonate in proper amount instead of the bicarbonate?

In making syrup without heat, if the water is added to the sugar, lumps form which are hard to break up; if the sugar is added to the water with continuous stirring, after a part of the sugar has been added, the solution becomes somewhat viscid and the last of the sugar will ball up and float and it requires a great deal of stirring to dissolve it, but it has been observed that if all of the sugar (free from lumps) is poured into the water without stirring, the greater part will be dissolved and no lumps will be found either on the top or bottom, and that the excess on the bottom can be easily dissolved by stirring a short time. Much time and labor is saved by this method, where large quantities are made.

In very hot weather, such as is often experienced in the South, it is impossible to dispense Zinc Oxide Ointment and Belladonna Ointment when made according to the U. S. P. formulæ in a solid state. The U. S. P. should permit the addition of from 5 to 10 *per cent.* of white wax in the summer time.

A sample of citric acid was purchased which formed a yellow solution when dissolved. Analysis showed a large amount of iron present.

Below are given two incompatible prescriptions with criticisms:—

℞ Strontium Bromide..... 4 drams
Mixt. Rhubarb and Soda, q. s. ad..... 3 ounces
Misc.

When the strontium bromide was added a strong effervescence occurred and carbon dioxide was given off freely. This was caused by a reaction between the strontium bromide and the sodium bicarbonate in the Mixture of Rhubarb and Soda which formed sodium bromide, carbon dioxide and water and precipitating strontium carbonate, according to the following equation:—

$$SrBr_2 + 2NaHCo_3 = SrCO_3 + 2NaBr + H_2O + CO_2$$

The gas was allowed to escape before bottling and a shake-label attached.

℞ Tr. Ferri Mur..... 1 ounce
Dil. Phosphoric Acid..... 1½ ounces
Syr. Hyphophosphites (Churchills), q. s..... 1 pint

However mixed there was produced a heavy gelatinous white precipitate of Ferric Hypophosphite with perhaps some calcium phosphate. By using the Tinct. Citro-Chloride of Iron a precipitate is avoided and a yellowish transparent solution is produced.

When sifting tartaric acid or beta-naphthol, great annoyance is often experienced by the powders irritating the skin. By applying talcum powder freely to the face and hands the trouble may be avoided.

Tinct. Iodine applied to a silver nitrate stain on the skin, followed by an application of ammonia water, will change the stain from black to white and it will be removed.

Peroxide of Hydrogen, applied to a stain of ferrous iodide on the skin, will liberate the iodine, making a red stain, a mixture of dilute acetic acid and sodium hyposulphite will instantly remove this.

DIFFICULT PRESCRIPTIONS.

J. LEON LASCOFF, PHAR. D.

I.

℞	Chloretone	1 gr.
	Homatropin hydrochloride	1 gr.
	Aq. Camphoræ	2 dr.

A precipitate was formed which dissolved on warming and later re-precipitated on cooling. We used distilled water, instead of the camphor water, and a clear solution was obtained. After exposing the first mixture in an open vessel for a time, the solution became clear, showing that the precipitation was due to excess of camphor. The liquid being already saturated with the latter cannot dissolve any other salt which is soluble only in this proportion (Chloretone is soluble—1 in 100). This can also be applied to other *saturated* solutions in which no other salt can be dissolved.

II.

℞	Sod. Bromide	15.0 gr.
	Antipyrin	2.0 gr.
	Glycerin	30.0 cc.
	Aqua, q. s. ad	120.0 cc.

This prescription has very often a green color. This is due to traces of nitrous acid present in glycerin, which reacts with the antipyrin and gives the green color. By the use of Glycerin C. P. a colorless mixture is formed.

III.

℞	Potass Citrate	2 dr.
	Syr. Ipecac	½ dr.
	Syr. Pruni Virginiana	1 oz.
	Aqua, q. s. ad	3 oz.

This prescription was sent to us for experiment. We find that the potassium citrate neutralizes the acetic acid, which is added in preparing the syrup of ipecac, to hold in solution the constituents of ipecac, as emetine and others. As the acid is neutralized, the constituents are precipitated. To prevent this, add to the syrup of ipecac, a few drops of acetic acid before mixing. In this case you will get a clear mixture.

IV.

℞	Calamini	4.0
	Zinci Oxidi	6.0
	Glycerini	30.0
	Olei Amygdalum dulcis	30.0
	Aq. Calcis, q. s. ad	120.0

If this prescription is compounded in the order it is written, the oil separates, and no amount of shaking will cause it to mix. To have this prescription properly made, mix the oil with an equal amount of lime water, and shake until an emulsion is formed. Then add a few drops of Fl. Ext. Quillaja and gradually add the remainder of the lime water and the glycerin. Mix the powders in a mortar, and rub up with the mixture. This will form a nice uniform lotion. Even after standing a few days, the powder was still in suspension.

V.

℞	Deutoiodureti hydrargyri	0.2
	Potassii iodid	30.0
	Tincturae Iodi	0.4
	Syrupi Ferri Iodidi	45.0
	Aqua q. s.	120.0

This prescription which is red on first mixing becomes decolorized on standing. The diluted hypophosphorous acid of the syrupus ferri iodidi reacts with the free iodine of the tincture, forming hydriodic acid which is colorless. To have the free iodine which is wanted present in this prescription, therefore the syrup ferrous iodide (1890) which does not contain hyphosphorous acid, should be used. This forms a clear, red mixture, which remains so on standing.

N. B.—The physician informed the patient not to accept the prescription unless it was of red color.

VI.

℞	Liq. Potass Arsenitis	2 dr.
	Syr. Ferr. Iodidi, q. s.	2 oz.

Liq. Potass Arsenitis contains potass. carbonate. The potassium bicarbonate on boiling being converted into carbonate. This,—if the syrup does not contain diluted hypophosphorous acid, as the syrup of U. S. P. 1890,—will react with the ferrous iodide, forming a precipitate of ferrous carbonate, which is converted into ferric hydroxide. To prevent this precipitation, use a syrup containing accurate amount of diluted hypophosphorous acid, or neutralize the Fowler's Solution with diluted hypophosphorous acid before mixing, and you get a perfectly clear mixture.

VII.

℞	Olei Cadini	20.0 cc.
	Aqua. Destil. q. s. ad	120.0 cc.

Oleum Cadinii could not be emulsified by the ordinary emulsifying agents, neither could a suspension of the oil in water be obtained. The best way to prepare this is to emulsify the oil with the yolk of an egg, then adding a few drops of Fl. Ext. Quillaja (Soap Bark). This helps saponification.

RED GUM.

JOHN K. THUM.

Eucalyptus rostrata, sometimes referred to as Australian Kino, and more popularly known by the name "Red Gum," is to be found on the market, pharmaceutically, in the form of troches and in a fluid form, misleadingly termed by the manufacturers, a fluidextract.

Like Kino, U. S. P., it contains considerable tannin which makes it extremely valuable as an astringent. The so-called fluidextract has obtained some vogue among throat specialists as a local application in place of the well-known Glyceri-

tum Tannin, it being much more agreeable and pleasant to the patient, and is just as efficient as the latter preparation.

While all the manufacturers who market a fluid form of red gum have it listed in their price lists as a fluidextract, some have an asterisk placed beside the word and, on referring to the footnote, one finds these words:—"those fluids which do not represent the crude drug, minim for grain"; which is a tacit confession that it is impossible to make a hundred *per cent.* solution of this drug.

From a study of the literature relating to this drug,—and this literature, by the way, is scant,—one is informed that it is soluble in cold water to the extent of 80 to 90 *per cent.* This is wrong. It is extremely doubtful if as much as 30 *per cent.* is soluble in cold or even in boiling water. My experience leads me to believe that less than 20 *per cent.* of the drug is soluble in boiling water, and that it refuses to remain in solution without the addition of varying amounts of glycerine; without this addition gelatinization always results. My experience also showed that the use of alcohol in effecting solution is unnecessary or is at least less effective than a menstruum consisting of water and glycerin. Heat must be used. I found that after shaking twenty parts of the powdered drug with eighty parts of cold water, at intervals, for twelve hours, two parts of drug remained in solution. By heating in a flask on a water bath for fifteen minutes and frequently shaking, about 10 *per cent.* is dissolved. Unfortunately after a few days a jelly-like mass resulted. This, however, as mentioned above, can readily be overcome, or rather avoided, by the addition of glycerin, or better still, by heating on a water-bath with equal parts of glycerin and water.

After more or less experimentation, which I need not recount here, I evolved the following formula and method of procedure which seems to meet all the requirements of those physicians who wish to use Red Gum as a local application:—

Red Gum, powdered	200 gm.
Glycerin	250 cc.
Water, a sufficient quantity to make	1000 cc.

Mix the glycerin with five hundred cubic centimeters of water, and triturate the powdered red gum with sufficient of the mixture to produce a smooth paste. Transfer this to a flask by the aid of the remainder of the mixture of glycerin and water and heat on a water-bath for one hour; filter through purified cotton, keeping the funnel well covered. Finally, pass sufficient water through the filter to obtain one thousand cubic centimeters of fluid.

TURKISH SUPPLY OF GUM TRAGACANTH.

Owing to the scarcity of labor due to military levies the gathering of most of this year's yield of Asia Minor gum tragacanth was prevented. The local stock remaining from last year does not exceed 30 tons. There has been little demand this year from European buyers, but some small shipments have been made to the United States. Prices are abnormally low, but increased freight rates bring them to almost the usual level. Good natural gum sells for 38 cents per pound c. i. f. New York. The white variety is slightly dearer.—*Consular Report.*

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixty-Second Annual Convention

PHARMACOPOEIAS AND FORMULARIES OF THE WORLD.

R. H. NEEDHAM.

Mr. Otto Raubenheimer offered an exhibit of Formularies, principally German ones, at the last meeting of the Section on Pharmacopœias and Formularies, in Nashville. At the same time he delivered a very interesting lecture on the different works, taking up each one in detail. The effort of Mr. Raubenheimer to acquaint the Section with the Pharmacopœias and Formularies of the Continent, led the President, I presume, to assign to me the task of compiling a list of the publications. While I welcomed the assignment and made preparations to present a more complete list, circumstances, over which I had no control, have prevented me from completing the list as I had planned.

To increase the interest in this paper I will make explanations concerning several publications.

I have not included in my list a large number of formularies and receipt books in the United States, confining my attention to the recognized authorities of other countries.

Great Britain has a long list of so-called pharmacopœias, which are in reality formularies, almost every hospital or infirmary having its own formulary. "Squire's Companion to the British Pharmacopœia" and his "Pharmacopœias of the London Hospitals," (published by J. & A. Churchill, London, edited by P. W. Squires) have been standard works of reference in London and England for over forty years. The former is the classic commentary of British Pharmacopœias, originally issued after the first British Pharmacopœia appeared, has kept pace with both medical and pharmaceutical science. The latter has been in existence over a quarter of a century, devoted not only to giving information concerning pharmaceutical processes, but has been a repository of everything worth while, regarding new remedies. "Martindale's Extra Pharmacopœia" is edited by Dr. W. H. Martindale and Dr. W. Wynne Wescott, published by H. K. Lewis, London. The latest edition appears in two volumes, the second part being devoted mainly to analysis, organotherapy, bacteriology and physiologic chemistry. The British Pharmaceutical Codex is published by the Pharmaceutical Society of Great Britain, with a view of providing formulæ for mixtures, etc., in imitation of the popular specialties issued by the drug houses and to combat the increasing tendency of giving trademark names to synthetic chemicals. The Pharmaceutical Formulas and Provincial Hospital Formulas are issued by

the publishers of the Chemist and Druggist. The Pharmaceutical Formulas devotes itself to the practical work of the drug store, almost entirely, though its information is encyclopedic in character and therefore very valuable to the practising pharmacist. Canada, in addition to the British Pharmacopœia and the Canadian Formulary, uses the United States Pharmacopœia, National Formulary and the Dispensatories.

"The Taxa" of Russia is an authorized official list of the prices that a pharmacist may charge for drugs, chemicals and pharmaceuticals in various quantities. In addition to the Russian Pharmacopœia there are a number of Formulæ published as an appendix to the official "Taxa." Two German Formularies, translated, are in common use.

Cuba, in addition to the Spanish Pharmacopœia, uses French works, translated. Mexico also uses several translated French texts in addition to the Dispensatory.

I desire to express my appreciation for services rendered me in compiling this list. Assistance was given by Mr. Otto Raubenheimer, Burroughs Wellcome & Co., London, the managers of Parke, Davis & Co. in London and St. Petersburg, and several others.

LIST OF PHARMACOPOEIAS AND FORMULARIES.

UNITED STATES.

United States Pharmacopœia.
National Formulary.

GREAT BRITAIN.

British Pharmacopœia.
Martindale's Extra Pharmacopœia, 1912.
Dublin Pharmacopœia.
British Homoepathic Pharmacopœia.
Squire's Companion to the British Pharmacopœia.
British Pharmaceutical Codex, 1911.
British Dental Pharmacopœia.
Provincal Hospitals' Pharmacopœia (Formularies):
- Bradford Infirmary.
- British Hospital for Diseases of Skin.
- Charing Cross Hospital.
- City of London Hospital for Diseases of the Chest.
- Evelina Hospital for Sick Children.
- Hospital for Consumption and Diseases of the Chest, London.
- Hospital for Diseases of the Throat, London.
- London Hospital.
- Manchester Royal Infirmary.
- Middlesex Hospital, London.
- Royal Hospital and Infirmary, Edinburgh.
- Royal Naval Hospital, Haslar.
- Saint Bartholomew's Hospital, London.
- Saint George's Hospital, London.
- Saint Thomas' Hospital, London.
- Sheffield Union.
- Pharmacopœia, Guy's Hospital, London.
- University College Hospital
- Universal Pharmacopœia.
- Squire's Pharmacopœias of London Hospitals

Royal College Physicians of London.
Mericat—Chirurgical Pharmacopœia.
Prescriber's Pharmacopœia.

FORMULARIES (Proper)

Pharmaceutical Formulas, 9th Edition.
Pocket Formulary, (H. Beasley.)
Bournemouth Formulary, (Bournemouth Pharmaceutical Association.)
Pharmaceutical Formulary, 1904, (J. O. Braithwaite.)
Unofficial Formulary, (British Pharmaceutical Conference.)
Formulary, (Central London Throat, Nose and Ear Hospital.)
Glasgow and West of Scotland Formulary, (Glasgow and West of Scotland Chemists Association.)
Universal Formulary, (R. E. Griffith.)
Compendium of Pharmacy and Druggists Formulary, (W. B. Kilner.)
Tables of Materia Medica with Formulæ, (J. Kirby.)
Practical Hints and Formulas, (B. Lillard.)
Pharmaceutical Formulas, 1911, (Peter MacEwan.)
Formulary for New Remedies, (F. Magendie.)
Manual of Formulæ.
Druggist's Handbook of Formulas, (J. H. Nelson.)
Introduction to Pharmacy with Formulas, (E. Parrish.)
Pharmaceutical Journal Formulary (Pharmaceutical Society of Great Britain.)
Gray's Supplement, (T. Redwood.)

INDIA.

The Prescribers Pharmacopœia, (Kemp & Company, Bombay.)

CANADA.

The Canadian Formulary, (Toronto.)

FRANCE.

Codex Medicamentarius, Pharmacopie Francaise, 1908 Ph. Fr. V.
Formulaire (H. Bocquillon-Lumousin.)
Nouveau Formulaire Magistral, A. Bouchardt.)
L'Officine, Conspectus des Formularies, 1911, (F. L. M. Dorvault.)
Formulaire, (Dujardin-Beaumentz & P. Yvon.)
Nouveau Formulaire pratique des Hospitaux, (H. M. Edwards and P. Vavasseur.)
Formulaire des Medecins Practiciens, (F. Foy.)
Formulaire, International, (J. Jeannel.)
Pharmacopie Universelle, (A. J. L. Jourdan.)
Formulaire des Maladies des voies Urinaires, (F. Mallez.)
Formulaire des hopitaux civils de Paris, (F. S. Ratier.)
Formulaire raisounes des Medicaments, (O. Reveil.)
Formulaire des Specialites Pharmaceutiques, (Gorditti, Paris.)
Formulaire Magistral de Therapeutigue Clinique et de Pharmacologie, (Martin, Paris.)
Formulaire des Pharmaciens Francasi, 1911, (F. P. F., Orleans.)

GERMANY.

Deutsches Arzneibuch, 5 Ausgabe, 1910. Ph. Germ. V.
Hager's Handbuch der Pharmazeutiscen Praxis, two volumes and supplement, Berlin, 1908.
Neues Pharmazeutisches Mannual, Eugen Dieterich, by Karl Dieterich, Berlin, 1913.
Erganzungsbuch zum Arzneibuch fur das Deutsche Reich, Driette Augsgabe, published by Deutscher Apotheker Verein.
Verschriften fur Entfernung von Flecken, (S. Andresen.)
Vorschriften zur Selbstbereitung Pharmazeutischer Spezialitaten, published by Deutscher Apotheker Verein.
Formulæ Magistrales Germanicæ, (F. M. G.) by Dr. L. Lewin.
Meyer's Muster-Rezepte, (Gustav Meyer, Berlin, 1910.)
Formulæ Magistrale Berolinenses, (Berlin Formulary of F. M. B.)
Dresdener Vorchriften, published by Verein der Apotheker Dresden's und der Umgegend, (Dresden Formulary.)
Vorschriften zur Gleishheitlichen Herstellung Pharmazeutischer Zubereitungen by Dr. Carl Bedall, (Munich Formulary.)
Hamburger Vorschrften Sonderabdruck aus der Apotheker-Zeitung, (Hamburg Formulary.)
Dr. Unna's Magistral Formeln, Sonderabdruck aus der Pharmazeutischen Zeitung.
Beiersdorf's Handbuch, P. Beiersdorf & Co., Hamburg.
Vierteljahresschrift fur Praktische Pharmazie, (H. Salzman und W. W. Wobbe, Berlin.)
Manule Pharmaceuticism, (H. Hager.)
Pharmaceutisch-technisches, (H. Hager.)
Pharmaceutisch-technisches, (Hanover Formulary.)
Pharmaceutisch-technisches, (Bavarian Formulary.)
Formular Pharmazeutischer Spezialitaten heransgegeben von Luxemburger Apotheker Verein, (Luxemburg Formulary.)

BELGIUM.

Pharmacopœia Belgica Editis Tertia, 1906.
Formuaries:—
Formulaire de Preparations Pharmaceutiques Adopte para Societ de Pharmacis D' Anvers, (Antwerp Formulary.)

ARGENTINA.

Farmacopea Nacional Argentina, Primera Edicion, 1898, Ph. Arg., 1.

CHILI.

Farmacopea Chilena, 1886, Ph. Chil., 1.

DENMARK.

Pharmacopea Danica, 1907, Ph. Dan., VII.

GREECE.

Pharmacopœa Helvetica, editio Quarta, 1907, Ph. Helv., IV.

SPAIN.

Farmacopea Oficial Espanola, Septima Edicion, 1905, Ph. Hisp., VII.

AUSTRIA.

Pharmacopœa Austriaca Editio Octavo, 1906, Ph. Austr., VIII.
Formularies:—
Hell's Manuale, 2 Vols., (Gustav Hell Troppen.)
Praeparata Pharmaceutica, Vienna, 1903, (S. Rektorik.)

ITALY.

Farmacopea uffciale del regno d'Italia, Terza edizione, 1909.
Medicamenta, 1908, (Migliaia, Milano.)

HUNGARY.

Pharmacopœa Hungarica, editio tertia, 1909, Ph. Hung., III.

JAPAN.

The Pharmacopœia of Japan, 1906, (English Translation, 1907) Jh. Japan, III.

MEXICO.

Nueva Farmacopea Mexicana, cuarta Edicion, 1904, Ph. Mex., IV.
Pharmacist's Manual and Formulary, (Agustin Guerrero.)
Bonchardi's Formulary.
Dujardin-Beaumetz's Formulary.
Gardette's Formulary.

HOLLAND.

Pharmacopœa Nederlandica, editie quarta, 1905, Ph. Ndl., IV.

SERBIA.

Pharmacopœa Serbica, editio secunda, 1908, Ph. Serb., II.

RUSSIA.

Pharmacopœa Rossica, sixth edition, 1910, Ph. Ross., VI.

Formularies:—

The Taxa.

Dieterich's New Pharmacutical Manuel, 9th Edition, (Translated from German.)

Manuel Pharmaceuticum, (Hager) Translated from German.

SWEDEN.

Svenska Farma Kopen, (Pharmacopœa Svecica, edition IX) Ph. Sevs., IX.

VENEZUELA.

Farmacopea Venezolana, 1898, Ph. Ven., 1.

FINLAND.

Farmacopea Fennica.

PORTUGAL.

Pharmacopœa Lusitanica.

NORWAY.

Farmakopen Norvegica.

POLAND.

Farmacopea Polonica.

CUBA.

Farmacopea Oficial Espanola, Septima Edicion, 1905.

Formularies:—

Formulario Practico, (Dujardin-Beaumetz por Gilbert and Yvon.

LaOficina de Farmacia Espanola, (Segun Dorvault) Madrid, Spain.

IMPORTS OF POTASH SALTS IN FEBRUARY.

Public interest in the statistics regarding imported potash salts is keen, both by reason of their wide application in the manufacturing and other industries and the fact that the United States is still dependent upon foreign countries for practically the entire supply thereof. The following table shows the imports of potash salts during the month of February, 1915, compared with February of last year. The figures are so grouped as to show those potash salts used chiefly as fertilizers, which are entered by the long ton, and those which are used in the arts and chemical industries, of which the unit of quantity is the pound.

Articles Exported	February, 1914		February, 1915	
	Quantities	*Values*	*Quantities*	*Values*
Fertilizer salts:—				
Kanit tons	72,008	$321,723	1,852	$18,445
Manure salts.....do	12,451	124,122	900	14,748
Sulphate of potash.....do	5,098	210,327	1,378	59,804
Muriate of potash.....do	13,172	431,820	22,818	836,368
Other potash salts:—				
Carbonate of potash.....pounds	1,674,685	49,110	1,317,849	46,015
Caustic potash.....do	520,166	19,607	308,805	17,508
Nitrate of potash.....do	22,699	928		
Cyanide of potash.....do	5,611	890	266,651	39,327
Other potash salts.....do	638,112	52,119	456,011	42,429

Contributed and Selected

FURTHER FACTS ABOUT DRUG IMPORTATIONS.

HARRY B. FRENCH, PRESIDENT OF THE SMITH, KLINE AND FRENCH CO.

Under the heading of "Some Facts Concerning Drug Importations," by Dr. H. H. Rusby, of New York, in the "Journal of the American Pharmaceutical Association," of February, 1915, Dr. Rusby criticises the article contributed by Mr. J. W. England, on "Drug Importations," in the January issue of the Journal.

Dr. Rusby states that he agrees with Mr. England's general conclusions and claims as there outlined. He adds,—"On the other hand, there are statements in Mr. England's article that have no basis whatever in fact, and there are others which can be justly weighed only in the light of existing conditions to which he makes no reference." Dr. Rusby picks out this statement made by Mr. England, —"It is manifest that such a system gives a large scope for the use of personal influence and offers the possibility of gratifying private grudges. It is not asserted or intimated that any of the officials of the ports of this country are guilty of such nefarious practice, but it is certain that the system encourages such practice." Dr. Rusby answers by saying—"It is very likely that at some ports where little business is done, and where very few persons are employed, such knowledge incidentally reaches the analyst, but this is not a design in the establishment of the methods."

Any one who is acquainted with the importations at different ports knows that this is no answer at all. It is true that, in the Port of New York, where the bulk of importations is made, the system may be so enforced that Dr. Rusby is not acquainted with the ownership of the goods, the samples of which he is examining, and in fact we know that this is the case, as Dr. Rusby has made a statement to that effect, and he has the confidence of every man, but this condition does not and cannot prevail at other ports, where the importations are exceedingly small as compared with the importations at the Port of New York. If the office of Dr. Rusby was filled by a dishonest official, there is no doubt that he could obtain any information that he might wish to obtain as to what lots were represented by the samples submitted to him for examination. The statement of Mr. England remains with undiminished force. Mr. England did not directly or indirectly state or infer that any of the present officials were dishonest. He stated, and this statement is based on facts and on experience, that the tendency of the system was to debauch public officials. We may add here that this is the tendency of all bureaucratic administrations, when such officials set themselves above the law and outside of the law, and claim that they are justified in taking extra legal or illegal action, if in their opinion such action is for the benefit of the public. This course has been repeatedly followed, and for the reason stated, by

officials of the United States Government in their actions taken under the Federal Food and Drugs Act.

Dr. Rusby criticises, also, Mr. England's statement that Government officials higher up are apt to support the findings of their subordinates. This statement on the part of Mr. England can be established by facts. It can be shown that importations were rejected by officials of the United States Government for reasons that were extra-legal or illegal, and that their action was supported on appeal to the authorities at Washington, although it was known at Washington that the grounds on which the lower officials refused admission were illegal. Dr. Rusby explains Mr. England's position by a remark that is not worthy of that high repute in which he is held by the community. We hold that the following remark is not an argument and is an unjustifiable attack upon those who are trying to remedy a defect in the law and a great wrong, that is now inflicted upon the American people.

Dr. Rusby states, that in his opinion, the reason for Mr. England's impressions is that, "An importer who has always insisted upon his approval of the objects and purposes of the drug law ,and who has given it his continued support, suddenly finds himself saddled with a shipment of the unfitness of which neither he nor any one else has any doubt." This expression of Dr. Rusby needs only to be stated to receive the condemnation that it deserves. He possibly may have the writer in mind, when he has made this statement. It is hardly necessary for the writer to define his position or the position of the house of which he is President, but he can call upon the Department itself to prove that he has gone so far as to re-export goods that have been released by the Department, which he was told were released through a mistake.

Dr. Rusby adds,—"The rarest thing in all my experience, although I have known it to occur, is for an importer to exhibit a willingness to have the law justly enforced when this would result in a loss to him." It is unfortunate that Dr. Rusby's opinion of business integrity is so exceedingly low, but from our personal experience, we can give him certain facts that show a willingness on the part of importers to take a loss rather than to accept the delivery of goods that are of inferior quality.

Quoting further from Dr. Rusby, he states,—"A far more serious question than any of the above is that of providing for judicial review of the findings of experts, which Mr. England strongly approves, and in which approval he is supported by many of the ablest lawyers, judges and legislators in the country. On general principles, it would seem clear that the importer should have this right and it is only the result of experience that can lead one to take the opposite view."

It is worth while to quote Dr. Rusby at some length on this argument as the appeal to Congress to revise the law and give importers the right to appeal to the courts, is the chief argument of the agitation that is now spreading throughout the country. We would ask your attentive consideration to the argument presented by Dr. Rusby against granting such a right to importers, and in considering his argument it must be borne in mind, that this is a right already conceded to all importers of merchandise into the United States excepting only importers under the Federal Food and Drugs Act. Importers under the Federal Food and Drugs Act only claim the same right of appeal to the court of appraisers and to

the United States Court of Appeals, that is now granted to other importers, and now for Dr. Rusby—

"All seizures of interstate shipments are subject to court review and many hundreds of such cases have been brought since the Federal Food and Drugs Act went into operation. At many of these trials, I have been a listener and I can recall scarcely any into which gross perjury did not enter. Were one to judge only by his observations of such a case, he would be likely to conclude that there is no other class of persons so dishonest as these expert witnesses. Leaving out of consideration all cases in which there is a fair ground of error and all differences of opinion, I do not hesitate to assert that in nearly all important cases one or more witnesses testify to what they know or fully believe at the time to be untrue. Our unfavorable opinion of these results must be qualified by the reflection that in most such cases, some experts have been asked to testify who have refused to do so, on conscientious grounds. Nevertheless, it is never difficult for an attorney to find one or more who are willing to thus degrade the profession. I have seen a chemist deny the pinkish-color which promptly appeared in the test performed in the court room while he was looking on. I have known a witness, after having sworn to an entirely different result from that which he had previously obtained, to retire under instructions of his attorney, so that he would not see the result of the same test applied in the presence of a jury and in this way would escape being compelled to state the truth concerning it. I have heard a witness testify that all volatile oils contain alcohol in varying amounts, oil of peppermint about 90%. In this case, because that witness occupied the chair of Materia Medica in a medical college, while the one opposed to him was in a college of pharmacy, it was only with great difficulty that the jury could be convinced that his testimony was incorrect. It is this ignorance of the jurors, their complete dependence upon the statements submitted, and their unfitness for grasping and interpreting technical facts, in which the danger of this method of deciding such questions principally resides. As to the tendency of the witness to speak correctly, we must consider whether government witnesses, with no other influencing motive than that of justly and impartially upholding the law, are more or less likely to testify truthfully than are men who have been offered a rich fee, often a temptingly large one, to say that for the saying of which they are to be paid."

You will note from a careful perusal of this argument that Dr. Rusby does not advance any argument whatever against the justification of this request on the part of importers, and indeed, he goes so far as to say that this appeal is supported by many of the ablest lawyers, judges and legislators in the country, excepting that his personal experience is that experts as a class are thoroughly dishonest and that being so, it would be wrong to give the right of appeal to American citizens, and that it is very much better to leave these questions to be settled as they now are; that is, in the hands of public officials who have autocratic power, who customarily act beyond the law and contrary to the law, because of their interests in the welfare of the people, and who are presumably honest and incorruptible.

It should not require more than a statement of this argument to show that Dr. Rusby has placed himself out of court and that his arguments are not worthy of serious men who still have some faith in humanity and believe that, on the whole, men are honest. It is unfortunate that in Dr. Rusby's argument he has failed to appreciate the basic principle that underlies the demand for the right of an appeal to the courts. If the right was granted, such appeals would not be made on a question of quality, excepting the importer had a sure case, for the reason that no merchant is going to expose himself to the public as an importer of inferior goods. The appeal will be made only when necessary to protect the importer against the extra-legal and illegal acts so constantly perpetrated at the present time by officials of the Government of the United States and for the purpose of correcting inequalities of administration at the different ports.

In the Declaration of Independence is stated that it is the right of every man to pursue "life, liberty and happiness." This statement is no longer true as ap-

plied to a very large section of the American people. It is within the power today of a combination of officials of the Government of the United States to drive a man out of business and so make it impossible to enjoy that right which our Declaration of Independence declares to be inalienable. It is probable that the law is unconstitutional, because it deprives the American citizen of this birthright, but this cannot be known until a case is carried to the Supreme Court. Congress has always been looked upon as the bulwark of the personal freedom of American citizens. In passing the Federal Food and Drugs Act without the right of judicial appeal, Congress, probably unintentionally, betrayed the most important interests of the people.

Bureaucratic government is the government of despotism. It is practiced to its fullest extent in Russia and there has a political as well as a civil application. There is no difference in the Federal Food and Drugs Act as now enforced in this country and the bureaucratic government of Russia, under which a citizen can be seized in the dead of night and disappear forever, excepting that this particular law applies only to civil matters. If, however, the American people tamely permit bureaucratic government such as this in a civil matter, the time will come when it will be extended to political matters. The power of a large section of the American people for the "Pursuit of Life, Liberty and Happiness" has been placed in the hands of the United States Government officials, more or less honest, and more or less able. There should be no hesitation in redressing this wrong. Those of your readers whose ancestors helped to make this country what it is, know well that it was their intention to build up a free government under the law. It was because of bureaucratic government that this country severed its relations with Great Britain. While the abuses now existing in the administration of the law justify this amendment, this argument is of secondary importance, and the basis on which those numerous organizations that have taken up this matter with so much interest make their demand, is government of the people under the law.

To the Editor:—

I thank you for permitting me to see proof of Mr. French's reply to my last article in the Journal. My views were correctly stated in that article, and they were based upon knowledge rather than opinion.

I will thank you to say that I disclaim the intent to refer to any particular house or houses, which would be an abuse of my position. My language, as quoted by Mr. French, "It is the rarest thing in my experience," etc., makes my statement quite general. I think the most difficult feature in the administration of the law, as to both foods and drugs, has been this very common endeavor to secure the admission of shipments, after their unfit character has been demonstrated. Indeed, this by no means tells the whole story. The possibility of succeeding in such attempts, under the peculiar provisions of the law, has largely frustrated its beneficent purposes, and it will eventually become necessary to devise some new legislation to prevent this procedure.

I would like to add that what Mr. French says about the general tendency of bureaucratic administration is fully justified. It is hardly too much to say that

this growing tendency is alarming. We differ as to its bearing on the administration of the Food and Drugs Act. I am quite as sure that an ordinary jury is not the proper body to decide such technical questions as the identity, purity and quality of drugs, as Mr. French is to the contrary. Decision by a properly qualified body is no more bureaucratic than by an unqualified one, as the common jury certainly is. Very truly yours, H. H. RUSBY.

THE PRICE OF SUCCESS.*

W. H. COUSINS, WICHITA FALLS, TEXAS.

Every desirable achievement has its price. Every step forward costs effort. The chap who said, "There is no excellence without great labor," was not an amateur in the game of life. The man who said, "Eternal vigilance is the price of success," had cut the cards in the great game until he knew whereof he spoke, for verily no man was ever born with this much wisdom. Such philosophy comes only from those who have had the tutorship of necessity, that grim teacher who is dean of the school of experience in which not only fools but even the wise must learn the hard lessons of life. In fact, we are mostly fools until we go through the hardships that are thickly strewn along the road to success. Success is not a stationary attainment; it is forever moving away from its pursuers, and its luring call of work, work, work, comes with every waking moment and in dreams. The amassing of a million dollars may not mean success. The million that means success is the earned million that came little at a time through unceasing vigilance and hard work, and not the million that came accidentally when fate was loafing on the job. Eternal vigilance and hard work will put the poorest business on this continent into pay dirt as a profit-maker. Eternal vigilance is head work. There are many better pitching arms in the big leagues than the twirling wing of Christy Mathewson, but greater heads there are none. Success in business is a big game that works head and hands to full capacity. Hands cannot win without head work. Head will never score working alone. Brilliant ideas are born only to die in an unsystematized business that needs arranging from the curb to the alley. The store that looks like first money in a clean-up contest will never get anywhere if the want book and the advertising are overlooked. Every business that is approaching success must have at least one man whose judgment is supreme. He is a kind of a court of last resort. He has observed, worked and toiled. No detail has escaped his eagle eye or his lightning powers of discernment. He has seen things happen and things that have happened once do not have to happen again to remind him of the effect that comes from a certain cause. Once in a great factory on whose pay roll were thousands of men, with many experts and each supposed to possess all the information that went with his job and to be able to cope with any situation that might arise, it happened that the belt on a big machine was slipping and the operator of the machine did everything he knew to do, to no avail. The master mechanic of the plant was called and exhausted his collection of tricks

* The Practical Druggist, March, 1915.

of the trade, including the pouring of sticky belt dressing on the belt to make it hold the pulleys, but it continued to slip. After all had given up in despair, they went to the private office of the "Old Man" who had established the factory more than thirty years ago. The problem that had baffled the expert was laid before him and he solved it in two minutes; in three words he said, "Tighten the belt." It matters not how small the business nor how large, there must be "an old man" (or a young one) who knows things and holds himself personally responsible for everything that happens and never makes an excuse when things go wrong or takes credit when they go right. No business ever succeeded where nobody carried responsibility. How many successful business men could you find in the whole world who would buy a business, employ enough clerks to operate it, and go away and leave it expecting to succeed? Success depends mainly on the man. Some men would arrive at success in spite of all the obstacles that can be piled into their paths. The man who succeeds must pay the price. He must play the game for blood. He must not muff the grounders, beef at the umpire or play to the grand stand. Any time he takes his gun eye off of the works a long fly will slip out of his mit and old "Compet" across the street puts one by for a home run. In "eternal vigilance" eternal means what it says. Not semi-weekly or every now and then, but every minute. The chap who thinks he has bought success and the goods are not delivered, did not pay for it. The money was not on the mahogany. He mistook eternal for occasionally. He loafed at the plate until the umpire called two and swiped at the third one, and missed it seven feet. I call to mind a hot-house confection who smokes, swears and wears men's clothes, who thought he had a half-Nelson on success. He blew up recently, and when the smoke had cleared away it was found that he owed various firms scattered along from Augusta to Galveston a matter of twenty-eight thousand dollars for drug-store merchandise that a burglar would move back into the store if he found them on the curb. This lad was not allowed to succeed. He was sandbagged by environment. He has a good heart inside of him, and if his heritage had been poverty, success would have been his. The old birds of the pill game would have held him up as a shining example of the man who whipsawed fate and won in spite of hardships and a muddy track if he had only been born poor. His old man was too strong with the bank parchment when Willie was being rubbed into condition for his life's work in a college of pharmacy. He propagated and grew an idea that the big thing in the knowledge works was to put a large-size crimp in father's standing at the First National. He buckled down and boned in school sometimes when he was not too busy passing out the coin and got away with the pure white lambskin with the gold freckle down in the corner. Father got a bill for the damage, the figures of which looked like the number on a Rock Island coal car. The invoice was for clothes, books and laboratory apparatus, with enough incidentals to pay for the college campus at the rate of a hundred bucks the front foot. Father merely groaned and asked for exchange on New York. The bank clerk thought he had bought an ocean liner or a railroad. When Willie fell off the three-forty-five limited, father was there to take a look at his Golden Calf. The old gentleman looked at him with one of those long, searching glances that he was always wont to bestow on a likely-looking piece of real estate that in a few years would grow a crop of installment-plan bungalows that would pay

seven hundred *per cent.* profit. Now Father had sat in where it took gold eagles by the shovel-full to stay and had threes beaten to a whisper. He had put thirty to one on a pony that died on the track with slow fever. He was an inexperienced man at coming loose from coin in hunks. But as he gazed on Son he classified him as the most expensive luxury he had ever tried to maintain. As he thought of him and looked at him his Daddy Nature softened and his affections got mushy. He said to himself: "Ain't he my boy? Ain't he a son of his little mother? Didn't he bring home the bacon? Ain't he got a sheepskin from the college and a clearance from the State Board? Will I let him go out and fight fate for success like I did? Not on your petrified likeness. By the eternal heck, I never piked and I won't commence it now. I'll buy him a drug store with gold fixtures and a private office." The latter decision was the bomb that sent Willie's chances of success Hadesward. Father bought the store and Willie bought everything that was for sale by the entire drug trade. It was the old story, with the sheriff in the last act. It took Willie just two years to erase his John Henry from Bradstreet's book of batting averages and give the creditors the sand bag square on the bean. Willie did not intend to do it, but he could have steered an ocean liner across the Atlantic just as easily as he could pilot the big store with the big expense account toward success. In paying for success money is not a legal tender. Grilling experience, bloody perspiration and sleepless nights are some of the things exacted of the man who would burn his John Henry into the exclusive scroll.

Really successful pharmacists in most cases began with a sink full of unclean vials in the tender years of childhood, and by putting every moment that can be spared from sleep to the task of getting information on the game, finally in the afternoon of life are able to retire from the tile and spatula and spend the gloaming finding out what has happened in the world during their exile. They know the great Remington, but never heard Tolstoi. They are familiar with Wilhelm Bodemann, but not wise to Elbert Hubbard. The sweet-faced bride of former years, now a gray-haired matron, on a Sunday morning in spring leads him into a church where a kindly faced minister extolls the joys of the great beyond and the beauty of the golden city; and in the daze he is catching himself wondering what rent the best corners will bring, and if the cigarette tax is the same in heaven as in San Antonio.

Alfred Henry Lewis told the whole story when he made his "Old Cattleman" say: "Success in life hain't in holdin' a good hand, but playin' a poor one well." I have seen more wrecks that were attributable to bad buying than to any other one cause. Many a little drug store that would be a miniature mint if the proprietor could be satisfied with his own profit instead of trying to get the jobber's profit also by buying more goods than he needs to save a small discount. A small retailer is beginning to get in the game when he learns to buy a gross of Sal Hepatica for eight dollars instead of paying ninety for it.

This wonderful feat is accomplished by buying each dozen with the same eight dollars with which he bought the first dozen. A jobber's 2% each month beats a manufacturer's five, once a year. Of course, there are several thousand other things to do in the retail drug business besides the buying. Any man in the business is entitled to pull a bonehead occasionally, but must not pull the same one

twice. There is no primrose path that leads to success. Primrose paths lead elsewhere; especially is this true of the retail pill game. Success never fluctuates in the market. Fate is a square dealer and sells it to all of us at the same price. Sometimes it leaves us with flighty heads and nervous hands, but when we win there is a sweet satisfaction in knowing that we beat the game. Every man in the game has more brain than he uses, more ability than he shows, and is capable of more effort than he spends. Every successful man must study his business if he is to know it. He may know it to-day, but he must keep his eye on the signals or won't know it to-morrow. Every bit of power, both mental and physical, that the human dynamo will generate and apply is THE PRICE OF SUCCESS.

STATE NARCOTIC LEGISLATION.

(EDITORIAL COMMUNICATION.)

THE enactment of the Harrison Act marks an epoch in the history of narcotic legislation. It furnishes a new and original method of controlling the manufacture, sale and use of narcotic drugs, through the U. S. Treasury Department. It is both a police and revenue measure. It is intrastate as well as interstate in scope, covering both the states and the nation, and to a degree, if not altogether, it eliminates the necessity for state narcotic laws.

The Harrison Act, with its system of registration and recording, is an experiment in narcotic legislation, and the results will be studied with deep interest, both at home and abroad.

Each state has its sovereignty. The Harrison Act cannot abridge or interfere with the operation of the laws of any state respecting the manufacture, sale and use of narcotic drugs unless such laws are in direct conflict with the Federal statutes.

There is a general tendency on the part of the states to amend existing narcotic laws, or enact new ones, along the lines of the Harrison Act, and this attitude raises a very important question:—

Is it desirable *at this time* for the states to legislate, or is it not more desirable, in view of the experimental nature of the Harrison Act, and the possibility that Congress may amend it at the next session, to await the results of the experiment, and then amend or delete?

At the March meeting of the Philadelphia Branch, A. Ph. A., a resolution was offered by Dr. F. E. Stewart, seconded by Professor J. P. Remington, and carried unanimously: "That the Philadelphia Branch of the American Pharmaceutical Association hereby suggests to the Senate and House of Representatives of Pennsylvania that further legislation regarding the possession, sale, distribution and dispensing of habit-forming drugs be held in abeyance until a proper trial shall be given to the recently enacted Harrison Act intended for the control of the same, and that, therefore, further action regarding the bills now before the Senate and House relating to this subject be postponed in accordance with this resolution."

* Senate Bills Nos. 177, 185 and 198.

The following letter, addressed to the members of the Senate and House of Representatives of Pennsylvania, has been issued by the Philadelphia Drug Exchange:—

"A number of bills* have been introduced in the Legislature of the State of Pennsylvania modeled after the Harrison Act (H. R. No. 6282) for the regulation of the purchase, sale and possession of opium, coca leaves, their salt, derivatives or preparations, recently enacted by Congress and made effective as of March 1, 1915.

The Philadelphia Drug Exchange is in hearty accord with the purposes of the Harrison Act, but wishes to enter its most earnest protest against the enactment of State legislation along the same line, because it is absolutely unnecessary.

The Harrison Act is the result of years of study by experts of the Federal Government and representatives of Medicine and Pharmacy from all parts of the country, who carefully studied state and local conditions and framed a law that met the requirements of all sections.

From our technical knowledge of the conditions under which drugs are sold, we believe that the Harrison Act will prove to be the most effective law yet devised for minimizing the "dope evil" and that it should be given a fair and reasonable trial to demonstrate its possibilities and limitations before legislation of a similar character is enacted by the State.

Under the Harrison Act, dealers must keep a record of their purchases and sales of the interdicted drugs. Now, if each of the 48 states passes a law similar to the Harrison Act, dealers doing a national business will have to keep 49 sets of records, probably with widely varying requirements. Such a task would be most burdensome and with no compensating advantages to the public.

We trust you may see your way clear to oppose all narcotic legislation at this session of the Legislature."

At present, the existing state narcotic laws do not provide for the registration and recording of the manufacture, sale and use of narcotic drugs, and this omission makes them far less efficient than the Harrison Act.

It is claimed that the Federal law really does not go beyond the means of furnishing evidence to detect violation of the state laws, and that a state board of pharmacy securing evidence for prosecution under a state narcotic act would have access to the records required by the Harrison Act; but, the Commissioner of Internal Revenue has decided "that the board could get (and then only upon the payment of a fee) nothing in the way of a record except a verified copy of the statement of *purchases,* which revenue collectors may require; no records of any sales by wholesalers or manufacturers could be obtained in any manner unless it would be by the impracticable, almost impossible, procedure of getting the revenue collectors of districts to supply verified copies of a record of the purchases of every person registered in their districts—and this would not account for sales to persons outside the state. And when it had these records—if they could have been obtained—what could the board of pharmacy do? Nothing but report any discovered illegality under the Harrison Act to the Federal authorities!"—(N. A. R. D. Journal, 1915, 1159.)

If state narcotic laws are amended or enacted, and do not require the keeping of records, but depend upon the records of the Internal Revenue Department as evidence for prosecution, then the state will face the practical difficulties above mentioned, or if the state requires the keeping of records, also, then the work of the Harrison Act will be duplicated many times, and dealers doing a national business, or even business in a number of states, will have to keep numerous records and make numerous reports to the state authorities, and the result will be confusion worse confounded.

If the state narcotic laws are in conflict with the Federal Act, it should be determined whether such differences are important or unimportant, and then, of

course, if the differences are serious, the state laws should be made to conform with the Federal statute and with each other, *but,*

"Is it really necessary *at this time* to enact state legislation similar to the Harrison Act, in order to ensure proper and sufficient protection of the public?" Would it not be better for the states to wait until the Harrison Act has been tried-out? The Harrison Act is a good law, the best that has yet been devised, but its possibilities and limitations have not been determined, and its administration will doubtless reveal some defects. Why not wait, and then, in the light of experience with the Act, amend or enact state laws, if necessary, especially adapted to state conditions and in co-ordination with the Federal Act?

The arm of the Federal Government is longer than that of any state or municipality and much more efficient. It reaches into the remotest sections of the country, and experience may show that the Federal Act will serve the public—both general and pharmaceutical—much better than 48 state laws; and, that one law will be far less burdensome to pharmaceutical interests than 49 laws, goes without saying. J. W. ENGLAND.

PROFESSIONAL PHARMACY FROM THE VIEWPOINT OF THE COMMERCIAL LABORATORY.*

F. E. STEWART, PH. G., M. D.

By commercial laboratories I mean the laboratories of the great commercial houses engaged in the pharmacal and pharmaco-chemical industries. What are these laboratories doing for the medical and pharmaceutical professions? They are making most of the chemical, pharmacal and biological preparations used by physicians in treating the sick.

Why are the commercial laboratories making these preparations? Why are not the retail druggists making them? These closely related and mutually dependent questions cannot be answered in five minutes or in an hour.

As a general proposition it may be stated that the concentration of capital and the centralization of business has brought about this change.

No well-informed person will dispute that, from an economic standpoint, the business of manufacturing and dealing in medicinal drugs, chemicals and preparations of the same, can be carried on more successfully on a large scale, than when operated in a small way. This applies to all lines of manufacture and the drug business is no exception. The great department store is an outcome of this economic fact. The great manufacturing plants in all lines, exist because of it. The so-called trusts exemplify the same principle. The retail druggists, as a dealer in ready-made goods, is in competition with the department stores. As stated by the widow of an old-time prominent druggist in Philadelphia, "When I was a girl, no one thought of going anywhere but to a drug store for a sponge or tooth-brush, but now nobody thinks of going to a drug store for either. Everybody goes to the department store for both." While this statement is somewhat exaggerated, it illustrates the tendency of the times.

* Read at the February Meeting of the Philadelphia Branch A. Ph. A.

All will agree that true pharmacy is developing along the lines of higher education and greater technical skill. The standardization of medicinal drugs, chemicals and galenical preparations required by the Pharmacopœia is for the most part impractical except when conducted on a large scale, thus raising the practice of pharmacy, in this respect, above the reach of those retail druggists who are not doing sufficient business to make standardization work practicable.

The retail druggist, as a manufacturer of chemicals, is in competition with the great chemical houses with their laboratories and skilled chemists. What chance has he in such competition? Is there any reason why he should not purchase his supplies from the chemical manufacturing houses?

The retail druggist, as a manufacturer of galenicals, is in competition with the great commercial laboratories of the pharmaceutical manufacturing houses. While his chances in competition may be somewhat better than in competing with the chemical houses, the very fact that galenical manufacturing has been drifting away from the retail drug store into the great commercial laboratories, is a strong argument against the claim that the retailers can manufacture just as economically as the large laboratories. If he can purchase his supplies of galenical preparations from the manufacturing pharmaceutical houses at greater advantage than to manufacture them himself, is there any good reason why he should be denied the privilege? If he can prepare his chemicals and galenicals with greater economy in his own laboratory than to purchase them, he certainly does not display business ability if he does not do so.

There are of course two classes of pharmacists and manufacturing houses. One class regards pharmacy simply as a commercial business of barter and sale and the other class regards it as a profession. The former considers it perfectly legitimate to manufacture and sell almost anything for which there is demand or for which a demand may be created by advertising. The latter hold themselves responsible as professional men and experts in drugs and realize that the commercial methods of the former are incompatible with scientific and professional requirements. Professional experts cannot afford to employ misleading methods of advertising or give countenance to pretense and error in conducting their business. The moment the public has occasion to doubt the sincerity of their statements, their reputation as experts is gone, and they sink to the level of the charlatan and quack. Pharmacists in purchasing their supplies from manufacturing houses should not forget this distinction between professional pharmacy and pharmaceutical quackery, and should discriminate in favor of manufacturers who refrain from using such illegitimate commercial methods in their business or supply quacks with the products of their laboratories for carrying on the business of quackery.

The retail druggist, as a manufacturer of nostrums, is in competition with the commercial laboratories of the great manufacturing houses engaged in the nostrum business, but the nostrum business is not pharmacy. The nostrum business is the quack medicine business, whether carried on by a so-called patent medicine house or by the great manufacturing houses engaged in the pharmacal and pharmaco-chemical industries. True pharmaceutical practice consists in the selection, preparation, preservation, compounding and dispensing of medicines, prepared in accordance with common standards jointly adopted by the medical and pharmaceut-

ical professions and conforming with scientific and professional usages in their manufacture and sale. This is the true ideal of pharmaceutical practice. The false ideal is every pharmacist a manufacturer of his own nostrums and a prescriber of the same by recommending them over the counter as specifics or cures. The retail druggist who manufactures and recommends his own nostrums or the nostrums of manufacturing houses thereby becomes a quack doctor. He prescribes without a diagnosis and thereby violates the first essential to correct prescribing.

Before the advent of the advertising business, the retail druggist as a nostrum manufacturer was an individual quack doctor. The advent of the advertising business changed all this and to a large extent the retail druggist became an agent for the sale of nostrums manufactured by great nostrum manufacturing houses. The great manufacturing houses engaged in the nostrum business in advertising nostrums to the public are prescribing at long range without a diagnosis. The principle is the same whether the prescribing is done at long range without a diagnosis or at short range without a diagnosis.

Individualism in the practice of pharmacy is taught by every college of pharmacy and to the extent that such individualism is practicable, the ideal is correct, but individualism in the practice of quackery by pharmacists is not pharmacy. Such practice means pharmaceutical degradation.

Much of the so-called new remedy business carried on by the great manufacturing houses advertising to the medical profession is but another phase of the nostrum business. One class of nostrums is advertised in the newspapers to fool the people and the other class is advertised in the medical journals to fool the doctors. During the past thirty years tens of thousands of alleged new remedies have been introduced to the medical profession as wonderful discoveries in therapeutics. Not one-tenth of one *per cent.* of them have proved of any special therapeutic merit in comparison with older and better-known drugs used for the same purpose.

Now, it must be perfectly apparent that the retail druggists as manufacturers of nostrums and quack medicines cannot successfully compete with the great manufacturing houses engaged in this business.

It has been said that the retail druggist is threatened with extinction and this is not surprising under the circumstances. The question for us is:—What are you going to do about it? Many remedies have been suggested, one of which is the coöperative manufacturing of nostrums by commercial laboratories conducted under the control of retail druggists' organizations. But this plan is similar to that of the fish who jumped out of the frying pan into the fire to save himself from being served up for breakfast.

The pharmacists of New York recently had an opportunity to do something about it that would have placed pharmacy in the city of New York on a professional basis and gained public confidence. What did they do about it? Did they coöperate with Commissioner Goldwater in his attempt to force the nostrum manufacturers to publish their formulas so the public might be no longer deluded? No. They missed their opportunity and joined with the nostrum manufacturers in a protest against this. How can pharmacy expect to be ranked as a

professional vocation when the pharmacists as a body align themselves with those who prey upon the gullible public and exploit the sick.

I am saying nothing against the supplying of the public with pharmaceutical preparations made in accordance with scientific and professional requirements and dispensed to meet the demands of the public for legitimate household medication. That is one of the functions of the pharmaceutical profession. I am saying nothing against chemical and pharmacal manufacturing houses who introduce new and valuable therapeutic agents to the medical profession.

While we have all been debating what to do about it, the public has been waking up to the situation and the results are before us in drastic legislation which has been enacted and is being proposed for the protection of the public against fraud in the drug business. Why was it necessary to pass the Pure Food and Drugs Act? Why was it necessary to pass the Shirley amendment for the prevention of lying in advertising? Why was it necessary to pass the Harrison Bill to prevent the public from being debauched by habit-forming drugs? Were these bills aimed at the practice of true pharmacy, namely, the business of manufacturing and dispensing medicines, prepared in accordance with common standards jointly adopted by the medical and pharmaceutical professions, and dispensed to meet the demands of legitimate pharmaceutical and therapeutic practice? Were they not rather aimed at illegitimate practices on the part of physicians, druggists and the manufacturing houses?

Now, what is the remedy? Is not the remedy to be found in coöperation between the medical and pharmaceutical professions and the great manufacturing houses with their commercial laboratories having as its object the legitimate practice of pharmacy and medicine? Such coöperation means the elevation of pharmaceutic practice to the position of a learned profession, ranking as a peer with the other learned professions. It means the raising of the pharmacist to a higher position socially. The great commercial laboratories under such a system of coöperation would no longer be used for illegitimate purposes. They would be no longer employed for the manufacture of nostrums and quack medicines. They would be employed in the production of medicinal drugs, chemicals and preparations of the same, prepared in accordance with the latest scientific and professional requirements. The proper enforcement of pure food and drug laws, including amendments intended for the abolition of lying in advertisements, will bring this about. The educated and trained pharmacist will then be protected from unfair competition with quacks and pretenders. To the extent that each individual pharmacist is provided with capital and facilities to do his own manufacilities, he will purchase his supplies from the great commercial laboratories. own manufacturing because not properly provided with capital and laboratory facturing, he will be protected in so doing. To the extent that he cannot do his But in either case, he will maintain his individual responsibility as a professional man because he will be in position to guarantee that the medicines he dispenses in prescriptions and over the counter are made in accordance with common standards, jointly adopted by the medical and pharmaceutical professions.

It does not mean that new therapeutic agents will not be discovered and introduced commercially, but it does mean that this work will be done in coöperation

with the medical profession through the channels of original materia medica research. The work will be coöperative. In the coöperation the universities with their laboratories, hospitals and clinics will take part, and also the commercial laboratories of the great manufacturing houses engaged in the pharmacal and pharmaco-chemical industries. Thus the commercial laboratories instead of being a menace to professional pharmacal and medical practice will become of great service to the medical and pharmaceutical professions, to the science of medicine and to the cause of humanity.

THE HOUSE OF DELEGATES OF THE A. PH. A.

IN REGARD TO ITS BETTERMENT.

PROF. HENRY P. HYNSON.

The forty and more well organized and active state pharmaceutical associations which are most satisfactorily and efficiently protecting and promoting general pharmaceutic interests in the several states of which each is a part, are a positive pride and especially gratifying to all loyal and ambitious pharmacists.

All these state associations, you may be reminded, have exactly the same comprehensive character of membership. They include all the different phases of pharmacy and the basis of organization and the objects to be obtained are practically the same in all of them. So far as their diversified membership and the work they are doing is concerned, they are also in exact accord with the American Pharmaceutical Association of which they are proudly accepted children.

These state associations are in no way justly subject to adverse criticism, yet, they, like many other good things, should progress naturally, and their usefulness and helpfulness should be steadily extended. Indeed, notwithstanding all that has been accomplished by them, these organizations may be made of still more value to their local constituents and of immensely more assistance, nationally. How?

By giving them equal uniform and exclusive representation in a national body composed of their delegates. This may be done by giving them sole control of the House of Delegates of the A. Ph. A. Why?

Because, owing to the character of their membership, which is catholic, pharmaceutically, and not restricted to any special branch of pharmacy, the A. Ph. A. is the only national body with which they can consistently be connected, and the only one with the objects and work of which they can perfectly harmonize. In fact, they are now practically state divisions of the American Pharmaceutical Association; certainly, they are more possibly so and more nearly so than are any other class of local associations.

What advantages would follow correlating these state associations and more closely attaching them to the A. P. A.? Any one giving a moment's open thought to the subject will see. The assistance and interest of other state associations may be secured to further progressive measures originating in any one of them, if the measure is not strictly local. The accomplishments and the helpful experiences of one may be passed on to the many. The voice of each local association

may be heard by the others on national issues and the greatly desired uniformity of state laws and state measures may be more quickly secured, for instance, state pure food and drug acts, mercury bichloride regulations, poison labeling, weight and measure laws. There will always be interesting and helpful suggestions coming from the local bodies, regarding subjects that have been intelligently discussed "at home."

Representation in a national body will greatly stimulate and encourage these state associations, by giving them an outlet for their views and conclusions regarding national questions. It will give them vastly increased opportunities for action, such opportunities as they are seeking and must have.

To the A. Ph. A., the advantages of this more formal and more orderly connection will be manifold and far-reaching; the establishment of such a House of Delegates will at last make the American Pharmaceutical Association truly the national representative of pan-pharmacy, geographically and otherwise, and pan-pharmacy needs such representation just now to enable it to present a dignified, worthy and effective front when coöperating with other comprehensive representative bodies, such as the American Medical Association, the American Public Health Association or the American Chemical Society. Such a house of delegates will undoubtedly increase interest in the parent body and must, of necessity, bring greater loyalty for the A. Ph. A. in all state associations that have become an integral part of it through the House of Delegates. This greater interest will surely add individual members to the A. Ph. A., especially if such membership is made a pre-requisite to the office of delegate. It would be a happy sequel, indeed, if, finally, all members of the state associations should feel, in duty bound, to become members of the mother body, whose House of Delegates is composed solely of their delegates. It is safe to predict that these state associations *will* sooner or later get together just as the state boards have already become correlated. Why should it not be now and with the A. Ph. A.? This would be good for them and for it.

Now, then, what are the difficulties in the way? None, the getting rid of which would not greatly benefit and more consistently place all those involved. The disposal of the delegations that have been taking part in the transactions of the House of Delegates is absolutely all that is in the way of making it a creditably consistent, unusually useful, deservably desirable body.

Ninety-nine organizations appointed delegates and forwarded their credentials to the A. Ph. A. last year. Of these, six were purely local associations of retail druggists, which may have or should find national representation, like other such organizations in the National Association of Retail Druggists. Eleven sending credentials were local branches of the A. Ph. A., which already have full representation in the Council. Two were women's organizations, one of these an auxiliary of a national association, the other a local body; both could find agreeable placement in the Women's Section. Thirty were schools of pharmacy for which splendid national representation is offered in the American Conference of Pharmaceutical Faculties. Three were college alumni associations, which could more properly secure national representation through their respective schools or through the state association of the commonwealth in which their organization is

located. One, only, was a medical school, which is effectively represented, nationally, by the American Association of Medical Schools.

Delegates, representing the Executive Departments of the U. S. Government, the Republic of Cuba and the American Medical Association should, without question, be accorded much more respectful recognition at the General Sessions and should not be placed on an equal footing with the delegates from very small local associations, college alumni associations, local branches, *et cetera*.

There now remain but the six national pharmaceutic bodies, each specifically representative of some particular phase of pharmaceutical pursuit; these were N. W. D. A., N. A. R. D., N. A. B. P., A. A. P. C., A. M. M. P., N. A. D. C., and the thirty-six uniform state associations.

It is contended that the *National Associations* representing, nationally, the different phases or divisions of pharmacy should be given recognition at the general sessions, or should be formed into a congress to themselves, where they may equally discuss such matters as are of general interest to such national bodies as a whole.

Attempt has been made, and it is hoped that the attempt has been successful, to show that the already organized fully equipped state associations, which represent localities and not phases, so many as thirty-six of which appointed delegates last year, are the only bodies of the many, which can orderly and equally take part in such a house of delegates, also to show that such a body of delegates would be most helpful to the state associations and equally as helpful to the American Pharmaceutical Association and to American pharmacy as a geographical whole. What is your verdict?

Changes in the By-Laws. The only necessary change required in the By-Laws of the House of Delegates of the A. Ph. A., to accomplish that which is herein suggested, will be a change of Article 1, Chapter 11, which reads as follows:—

"Article 1.—Representation. The membership of the House of Delegates shall consist of three regularly-elected or appointed delegats from the Local Branches of the American Pharmaceutical Association, State and Local Societies, Colleges and Schools of Pharmacy and delegates from the National Association of Retail Druggists, National Wholesale Druggists' Association, American Medical Association, National Association of Boards of Pharmacy, Women's Organization of the National Association of Retail Druggists, National Association of Manufacturers of Medicinal Products, American Chemical Society, Association of National and State Food and Dairy Departments, Association of Official Agricultural Chemists, and from the departments of the Army, Navy and Public Health and Marine Hospital Service, the American Association of Drug Clerks, the credentials of whom shall be approved by the Council; together with the member of the Council, appointed by the chairman of the Council. The President, President-elect, Treasurer, General Secretary and the Chairman and Secretary of the Council shall be members *ex officio*."

With the greatest possible respect for the incongruous mass of organizations named in the Article, it is thought no harm or discourtesy will be done to any of them and much greater respect will be shown for a number of them, by changing the Article to read:—

"Article 1—Representation. The membership of the House of Delegates shall

consist of three regularly-elected or appointed delegates from the several state pharmaceutical associations and from associations of a similar character regularly organized in the several territorial and insular possessions of the United States, provided such delegates are members of the American Pharmaceutical Association at the time their credentials are signed."

It will, probably, be desirable to have it understood and stated in the By-Laws that any action of the House of Delegates will be an expression of the sense of the assembled delegates of the state associations, also that the House of Delegates may appoint committees to execute its orders, but that no action of the House of Delegates will be binding upon the A. Ph. A., unless endorsed by the Council.

Messrs. F. H. Freericks, Joseph L. Lemberger, W. C. Anderson and F. M. Apple, members of the Committee appointed, with myself, at Detroit, "to investigate the House of Delegates and see if its usefulness could not be improved," are especially requested to make comment upon the subject in hand and communicate these comments to the other members of the Committee, including the chairman. Members of the House of Delegates and officers and members of the American Pharmaceutical Association are requested to make comments and communicate them to the chairman and other members of the Committee, either directly or through the Pharmaceutical Press. The editors of the Pharmaceutical Press are urgently requested to study the subject and take part in this discussion.

THE PERCENTAGE OF MOISTURE LOST IN THE PREPARATION OF SOME OFFICIAL AND UNOFFICIAL DRUGS.*

EDWIN L. NEWCOMB, P. D.

The following compilation of data, concerning the moisture lost in the drying of vegetable drugs, has been prepared from the record of student work in Pharmacognosy at the University of Minnesota. The drugs were collected during the first few weeks of each college year (September and October). Where washing was necessary to remove adhering soil, care was taken to remove all wash water before weighing the fresh drug. All drugs were dried at a temperature of about 80° C., except where otherwise stated. The drying was continued where artificial heat was employed, until all but two to four *per cent.* of the water was removed. A battery of five iron double-walled, gas-heated ovens were utilized for this purpose (v. 84, pp. 201-214, American Journal of Pharmacy). "Room temperature," as used in this paper, means from 68° to 70° F. This temperature was maintained by automatic thermostat controls.

	Percentage of Moisture
Belladonna Folia:—	
(a) 1913 Crop, leaves and tops not over 7 mm. dia., with flowers and numerous berries. (Average *percentage* of moisture lost in 30 samples)	71.00
(b) 1914 Crop, leaves only	82.00
Belladonna Radix:—	
(a) 1913 Crop. (Average of 29 samples)	75.00
(b) 1914 Crop. (Average of 2 samples)	73.6

* Presented to the Scientific Section, Minn. State Pharm. Assoc., St. Paul, Feb. 10, 1915.

	Percentage of Moisture
Stramonium, (Datura Stramonium):—	
(a) 1913 Crop, leaves and flowering tops with stems not over 7 mm. in dia	65.3
(b) 1914 Crop, leaves alone	83.00
(a) Average of 24 samples.	
(b) Average of 30 samples.	
Datura Tatula, (Stramonium, U. S. P. IX):—	
(a) 1913 Crop, leaves and flowering tops with stems not over 7 mm. in dia. (Average of 19 samples)	65.7
(b) 1914 Crop, leaves only. (Average of 48 samples)	82.7
Datura Laevis:—	
(a) 1913 Crop, leaves and flowering tops with stems not over 7 mm in dia. (Average of 17 samples)	72.00
(b) 1914 Crop, leaves only. (Average of 8 samples)	82.87
Datura Metelloides:—	
(a) 1913 Crop, leaves and flowering tops with stems not over 7 mm. in dia. (Average of 15 samples)	72.5
(b) 1914 Crop, leaves only. (Average of 28 samples)	83.00
Datura fastuosa coerulea:—	
(a) 1913 Crop, leaves and flowering tops with stems not over 7 mm. in dia. (Average of 30 samples)	73.4
(b) 1914 Crop, leaves only. (Average of 9 samples)	81.00
Datura atroviolaceae:—	
1914 Crop, leaves only. (Average of 19 samples)	82.00
Datura fastuosa flava:—	
1914 Crop, leaves only. (Average of 7 samples)	81.00
Datura fastusosa alba:—	
1914 Crop, leaves only. (Average of 27 samples)	81.2
Digitalis purpurea:—	
Leaves of first year's growth. Cleaned from adhering soil and dried quickly at 80 to 100 degrees Cent.	
(a) 1913 Crop. (Average of 95 samples)	80.9
(b) 1913 Crop. (Average of 62 samples)	81.6
(c) 1914 Crop. (Average of 28 samples)	80.3
(d) 1914 Crop. (Average of 51 samples)	81.74
Digitalis granditlora:—	
Leaves of the first year's growth, prepared the same as D. purpurea. (Average of 21 samples, 1913 crop)	79.4
Digitalis lutea:—	
Leaves of the first year's growth, prepared the same as D. purpurea.	
(a) 1913 Crop. (Average of 21 samples)	80.5
(b) 1914 Crop. (Average of 4 samples)	81.90
Digitalis lanata:—	
Leaves of the first year's growth, prepared the same as D. purpurea. 1913 Crop. (Average of 7 samples)	81.1
Digitalis ferruginea:—	
Leaves of the first year's growth, prepared the same as D. purpurea. 1913 Crop. (Average of 14 samples)	78.6
Salvia sclarea:—	
Leaves of the first year's growth, cleaned from adhering soil and dried at room temperature. (Average of 15 samples.) 1913 Crop	81.4
Verbascum phlomoides:—	
Leaves of the first year's growth, prepared like Digitalis. (Average of 29 samples.) 1913 Crop	81.8

	Percentage of Moisture
Althaea officinalis:—	
Leaves of the first year's growth, cleaned and dried at room temperature. (Average of 22 samples.) 1913 Crop	66.8
Symphytum officinale and S. asperrium:—	
Leaves of the first year's growth, prepared the same as D. purpurea. (Average of 22 samples.) 1913 Crop	81.4
Mentha Piperita:—	
(a) Leaves and tops not over 10 cm. in length, cleaned and dried at room temperature. 1913 Crop, average of 51 samples (Humidity was high during the drying.)	73.5
(b) 1914 Crop, dried same as above, average of 51 samples (Humidity was low during the drying.)	80.00
Salvia:—	
(a) Leaves and tops not over 10 cm. in length, cleaned and dried at room temperature. 1913 Crop, average of 49 samples	70.4
(b) Leaves only, cleaned and dried at room temperature. 1914 Crop, average of 9 samples	73.2
Marrubium:—	
(a) Leaves and tops not over 10 cm. in length, cleaned and dried at room temperature. 1913 Crop, average of 20 samples	67.6
(b) Leaves only, 1914 crop, dried as above, average of 9 samples	74.00
Humulus:—	
(a) Strobiles dried at room temperature, 1913 crop, average of 17 samples	71.7
(b) Strobiles dried at room temperature, 1914 crop, average of 25 samples	76.8
Cannabis sativa:—	
(a) Pistillate tops dried at room temperature, sample contained many seed, average of 27 samples	69.2
(b) 1914 Crop, prepared as above, also containing some seed, average of 24 samples	69.7
(c) Pistillate tops collected from wild growing plants, with very few seeds present. Average of 6 samples	70.7
Ruta:—	
(a) Leaves and tops not over 10 cm. in length, 1913 crop, dried at room temperature, average of 14 samples	72.7
(b) Leaves only, 1914 crop, dried at room temperature, average of 6 samples	76.1
Valeriana:—	
(a) The carefully cleaned rhizome with about 10 cm. of the roots, dried at room temperature, 1913 crop, average of 46 samples	73.3
(b) 1914 Crop, prepared as above, average of 41 samples	74.4
(c) 1913 Crop, prepared as above, average of 29 samples	75.00
Levisticum:—	
(a) The roots and crown carefully cleaned by washing, and dried at room temperature, 1913 crop, average of 32 samples (2-year-old plants)	75.7
(b) Prepared same as above, 1914 crop, average of 5 samples (3-year-old plants)	64.00
Inula:—	
The roots carefully cleaned by washing, and dried at room temperature. 1913 Crop, 2-year-old plants, average of 32 samples	66.6
Taraxacum:—	
The roots carefully cleaned by washing, and dried at room temperature. 1913 Crop, 2-year-old plants, average of 32 samples	73.4
Althaea:—	
The roots carefully cleaned by washing, and dried at room temperature, not peeled. 1913 Crop, 2-year-old plants, average of 27 samples	65.6

	Percentage of Moisture
Phytolacca:—	
The roots carefully cleaned by washing, and dried at about 80° Cent. One-year-old plants, average of 48 samples	74.9
Apocynum:—	
The roots and rhizomes carefully cleaned by washing, and dried at room temperature. Average of 6 samples	60.00

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A CRITICISM OF THE UNITED STATES PHARMACOPŒIAL DESCRIPTIONS OF VEGETABLE DRUGS.

A THESIS SUBMITTED TO THE FACULTY OF PURDUE UNIVERSITY.

CHALMERS JOSEPH ZUFALL.

INTRODUCTION.

The inspection of crude drugs in a pharmaceutical manufactory requires continual reference to the descriptions of official drugs in the United States Pharmacopœia. While these descriptions are considered authentic, the question often arises, are they really accurate and correct for commercial drugs? Comments and criticisms are repeatedly found in the pharmaceutical journals which lead one to suspect inaccuracy on the part of the pharmacopœia committee which wrote these, and the purpose of this investigation is to determine how well these descriptions can be applied to the drugs of commerce and to authentic specimens.

The drugs are to be taken, one at a time, and large quantities of the material studied. The conditions for this study at the Eli Lilly and Company's plant are almost ideal, for we are able to see more than a mere sample from each bag; we can see the entire contents of the bags and bales as they are emptied in the mill-room ready for grinding. Then the pharmacopœial description is compared with as many authentic specimens as possible. The herbarium specimen is first checked up with the botanic authorities and then the crude drug, the herbarium specimen and the pharmacopœial description are compared. In many cases, three to five mounted specimens of the one species from widely-separated regions were used, thus giving any variations due to climatic conditions.

Aconite:—The six lots and ten samples examined show that the pharmacopœial description is correct for Aconitum napellus except as to the thickness of the root. Many roots were found to be 35 mm. in diameter at the crown. The pharmacopœia gives this diameter as "10 to 20 mm." It should be given as "10 to 35 mm. in diameter at the crown."

In order to aid in distinguishing the official drug from A. fischerii, which is being offered on the market as the true aconite, the pharmacopœia should add that the "starch grains are 4 to 12 microns in diameter." Those of A. fischerii are much larger, being 10 to 22 microns.

Apocynum:—The pharmacopœial description of Apocynum is "The dried rhizome of Apocynum Cannabinum, *Linne,* or of closely allied species of Apocynum. The phrase "or of closely allied species of Apocynum" should be omitted, for this includes A. androsaemifolium, a "closely allied" species, so closely resembling A. cannabinum that it is difficult to distinguish between the two species, even when the plants are in flower. Yet, A. androsaemifolium has different medicinal properties and is used under the name of "Bitter Root." The foremost pharmaceutical botanists admit that they do not know the difference, and Henry Kraemer of the Philadelphia College of Pharmacy states that the only difference between these two roots is the presence of stone cells in the cortex of A. androsaemifolium and not in A. cannabinum. We have collected several specimens of the different species of Apocynum and are trying to establish the differences between these two species.

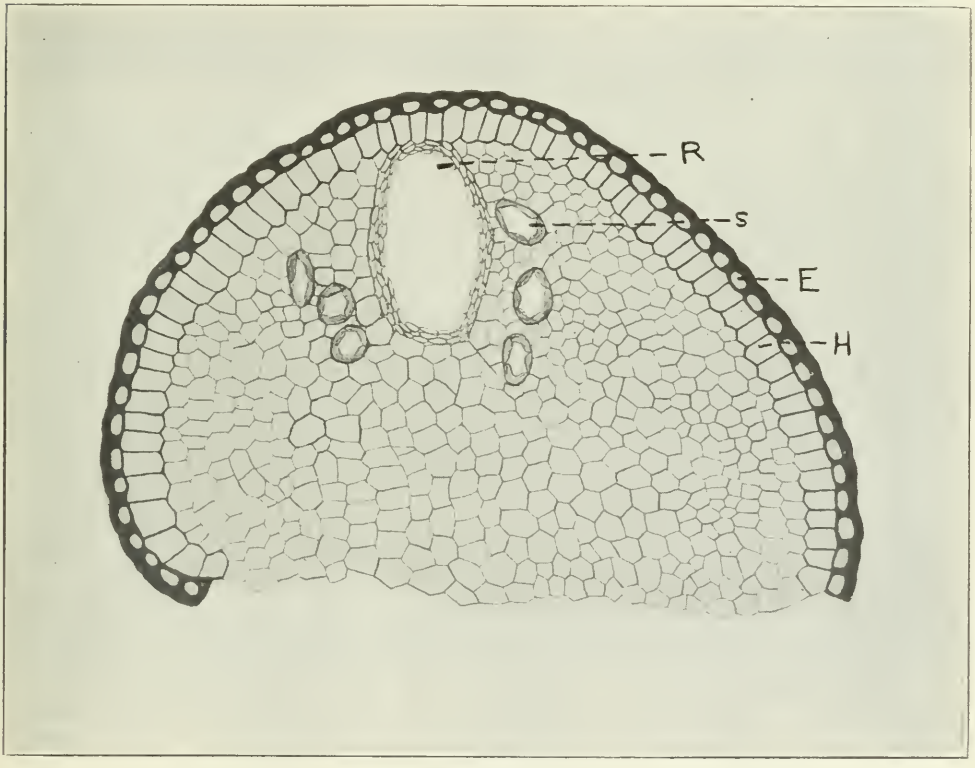


PLATE I.

SAVIN ADULTERANT—TRANSVERSE SECTION OF LEAF.

E, Epidermis; H, Hypodermis; R, Resin duct; S, Sclerotic cells.

Belladonna Leaves:—Belladonna leaves are often adulterated with the leaves and fruit of Scopola carniolica. The leaves of this adulterant resemble those of Belladonna so closely that it is almost impossible to detect it unless the fruit is present. So it seems wise to replace the phrase "frequently with the flowering tops intermixed," with the following, "usually with the tops possessing the dark brown or black, globular, indehiscent fruit, showing above the reflexed calyx

lobes." This will exclude the tops of Scopola which usually possess the yellow or light brown, subglobular, transversely dehiscent fruit which is almost completely enclosed by the thin, paper-like calyx.

The requirement of 0.3% alkaloids is too low for Belladonna leaves. In 61 assays of samples and lots made in the last five years only three have been as low as 0.3%. The average of these 61 assays is 0.44%. This indicates that the pharmacopœial requirement is too low for prime drug and should be raised to at least 0.4%.

Berberis:—During the examination of six lots, many Berberis roots were found to be 40 mm. in diameter so that the size should be changed from "3 to 20 mm." to "3 to 40 mm."

A peculiarity of Berberis not seen in other roots is that it splits upon drying. It would be well to state this in the pharmacopœia as one of the characteristics of Berberis.

Buchu:—It is impracticable to obtain Buchu without some stems. Some of these stems are thick, woody and undoubtedly inert while "others are thin and contain the active constituent in considerable amount." (1)

The *per cent.* and character of these stems should be controlled by the pharmacopœia.

The stems in five lots and of seven good samples offered for sale average .8%. The pharmacopœia should exclude Buchu containing more than 10% stems. The stems permitted should not be more than 1 mm. in diameter.

Capsicum:—During the last year, it was found difficult to obtain the real Capsicum fastigiatum. The Japanese pepper was offered continually for Capsicum. The small Japanese variety answers the pharmacopœial description, but they are of a lower quality and are less pungent. The description should include the following and thereby exclude all but the genuine Capsicum. "The cells of the pericarp are usually quadrilateral, 20 to 55 microns in diameter, more or less wavy in outline, walls indistinctly beaded and, which is most noticeable, arranged in distinct longitudinal rows." (2)

Cardamom:—While the pharmacopœia describes the cardamom "fruit" as official, it adds that "the seeds alone contain active and valuable constituents."

The seeds alone should be made official, since they alone are of value, and thereby lessen the amount of inert material in the preparations.

These inert pods may vary considerably, for some pods may be full while others may contain only a few seeds or may be empty. These empty pods, being much lighter than the seeds, will accumulate at the tops of the bag on being handled. Thus the druggist may get a large *per cent.* of pods in his first preparations made from a bag, while there may be very few in the last preparations; thus his products will vary considerably.

Since the seeds or "decorticated cardamoms" are plentiful on the market, there seems no reason why they should not be made official instead of the "fruit."

Coca:—The requirement of "0.5% ether-soluble alkaloids" is too low.

The average of 21 assays of lots and samples is .85% ether-soluble alkaloids, the lowest assaying .66%.

From these results it seems that the requirement should be raised to at least .75% ether-soluble alkaloids, for, if Coca leaves are properly gathered, properly

shipped and properly stored, they will give a much higher assay than the pharmacopœia requires.

Colchicum Seed:—The pharmacopœia requires only 0.45% Colchicine which would include rather poor seed. The average of 18 assays is .66% colchicine, the lowest being .53%.

These results indicate that first-class Colchicum seed will assay at least 0.6% colchicine, and the pharmacopœial requirement should be raised to this *per cent.*

Cubeb:—Cubeb berries grow in spikes, and in gathering the drug the whole spike is picked, which includes the peduncle. In drying and handling the drug, the berries become detached from the peduncles, which then occur as "stems."

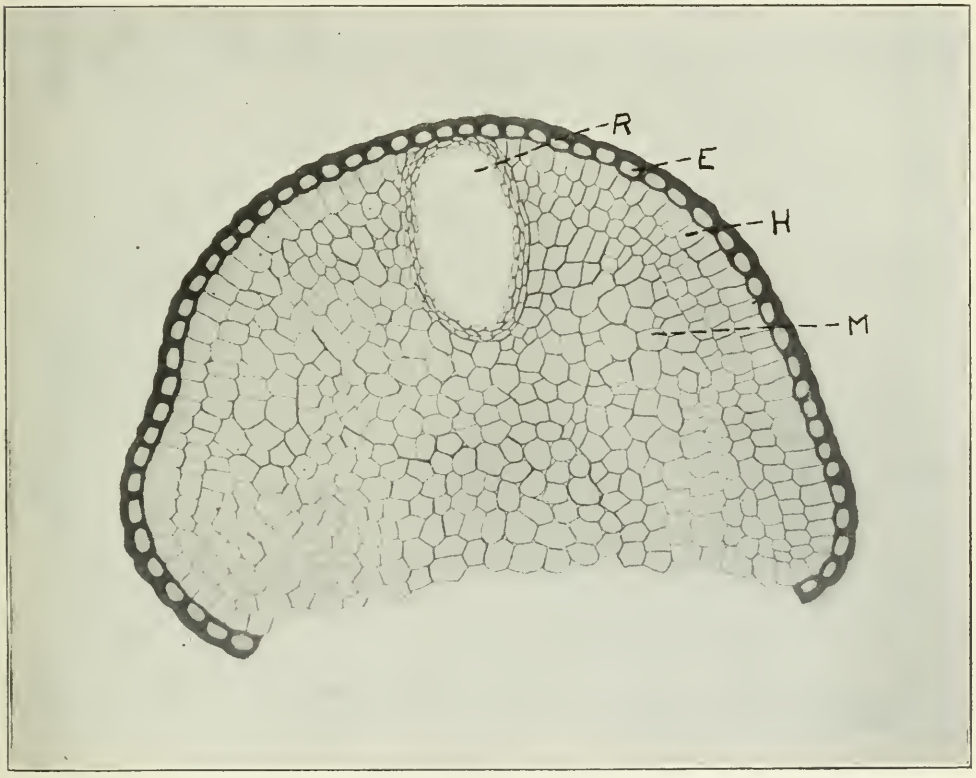


PLATE II.

JUNIPERUS SABINA—TRANSVERSE SECTION OF LEAF.

E, Epidermis; H, Hypodermis; R, Resin duct; M, Mesophyll.

Some berries on the market have no stems at all, while others have an excess of them. This indicates that the stems are removed from a part of the drug, for which a higher price is obtained, and these stems mixed with other lots and the average price obtained for it.

If stems are not deliberately added to Cubebs they will make a rather constant *per cent.* of the drug, so the pharmacopœia should specify that there shall not be more than 10 *per cent.* stems, and these should not be more than two mm. in diameter.

Ergot:—The examination of six lots, consisting of 154 bags, indicates that a few changes should be made regarding the color of the fracture and the pharmacopœia made to read as follows: "fracture short, gray, pinkish, blue or purple," instead of "pinkish, or reddish-white."

The thickness should be "from 3 to 5 mm." instead of "about 3 mm."

Grindelia:—The pharmacopœia states, "The dried leaves and flowering tops of Grindelia robusta and G. squarrosa," but does not state how much of the "tops." Since the activity of this drug evidently resides in the resinous exudation and since the resin is not found in the larger stems, the length of the "flowering tops" should be given so as to exclude the larger, inert stems. The maximum length should be 30 cm.

From the description in the pharmacopœia, one would infer that the two species, G. robusta and G. squarrosa, were very much alike, whereas the leaves and scales of the involucres are distinct in the two species. The pharmacopœia describes the leaves as "about 5 cm. or less long," whereas leaves 7 cm. long were found. "Lanceolate" should not be used in describing the leaves because that includes the leaves of G. Lanceolata, while the leaves of the two official species do not approach the lanceolate shape. Instead of "pale green" the leaves vary from pale green to greenish yellow.

The leaves are further described as "somewhat coriaceous, brittle." The leaves of Grindelia become very brittle upon drying and are not coriaceous.

From these discrepancies it seems best that the two species should be described separately because very often lots of drug arrive which are made up entirely of one species.

It seems that the following descriptions would be more scientific and workable than the one given in the pharmacopœia:—

Grindelia robusta:—Leaves 7 cm. or less long, broadly spatulate or obovate, sessile, more or less clasping at the base, finely to coarsely serrate, obtuse, light green to greenish-yellow, finely dotted, brittle; heads resinous-viscid, many-flowered, depressed-urceolate, 1 cm. broad, composed of numerous imbricated, linear-lanceolate spreading bracts; ray-flowers yellow, ligulate, pistillate sometimes absent, disk-flowers yellow, tubular, perfect; pappus of two or three mostly unequal awns about the length of the disk-flowers; taste pungent and bitter, odor aromatic and balsamic.

Grindelia squarrosa:—Similar to G. robusta except the leaves which are 4½ cm. or less in length and 8 to 15 mm. wide, usually decidedly oblong or oblong spatulate, obtuse, more or less clasping at the base, sharply spinulose-dentate, sometimes lacinite. The bracts of the involucre strongly squarrose.

Lupulin:—The results of examining five lots and 16 samples indicate that prime Lupulin has an amber-yellow color which should be given instead of "brownish-yellow." The latter color is seen only in drug which is not fresh.

There have been suggestions that the maximum ash limit is too low, but from our experience we know that it is not. Careless handling or willful adulteration are the only causes for the presence of the foreign mineral substance which causes the high ash in some Lupulin.

Savin:—The pharmacopœial description of Sabina is not specific enough to exclude several other species of Juniperus. Consequently, these other species are

found on the market offered for savin. The oils of these species are inactive and undoubtedly this is the cause of savin falling into disuse.

It is difficult to identify a species of the Juniperus from a twig alone, without specimens of the fruit and without knowledge of the form and habit of growth of the plant. The difficulty is twofold. In the first place, two plants which undoubtedly belong to one species, develop, if grown under varying conditions of soil and climate, very marked differences, both in general habit and in the character and mode of arrangement of the leaves. Juniperus sabina when found in the natural state, has decussate, ovate-lanceolate leaves, while the cultivated plant bears leaves which are more needle-like and sometimes in whorls of threes.

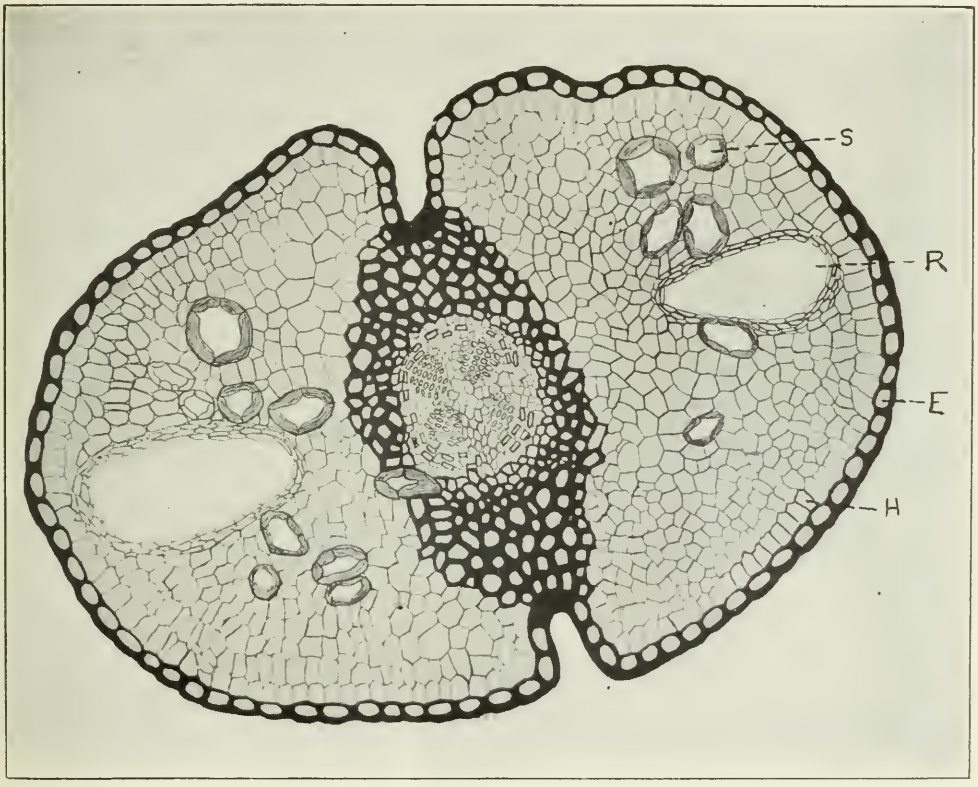


PLATE III.

JUNIPERUS OCCIDENTALIS—TRANSVERSE SECTION OF TWIG AND TWO LEAVES.

E, Epidermis; H, Hypodermis; R, Resin duct; S, Sclerotic cells.

In the second place, plants of different species have adopted a similar habit; for instance, forms of J. sabina, J. phœnicea, J. thurifera, J. barbadensis, J. virginiana, L. and J. scopulorum, Sarg. possess closely imbricated, acute or acuminate leaves, tightly appressed to the stems, and are externally almost indistinguishable one from another.

So variable are some of these plants that, of J. Sabina, seven varieties are recognized by Biessner and described by him in his "Handbuch der Nadelholzkunde."

In 1902, there was published by the Ecole Superieure de Pharmacie, Paris, a

thesis by H. Henri Mongin, entitled "Etude Anatomique de la fenille des Juniperinees." He pointed out that, in the drug of commerce, besides J. sabina, there were to be met with J. thurifera, L., and its variety gallica, and J. phœnicea, L. Most people would find it practically impossible to distinguish non-fruiting twigs of these species from the typical form of J. sabina. All have small leaves, closely appressed to the stem, giving the branches a cylindrical appearance. With fruiting specimens available, J. phœnicea is readily separated, having larger yellowish fruits, while the fruits of J. sabina and J. thurifera are small and bluish, resembling those of J. communis.

In 1874, M. E. Collin pointed out that the leafy twigs of J. phœnicea substituted for those of savin in French commerce. In 1902, M. Mongin found that they were still so employed in France, and indeed constituted the greater part of the drug met with in that country. He also points out that the oil of J. phœnicea is inactive, being similar to that of J. communis.

Mongin's work renders it possible to distinguish between J. sabina and these substitutes, even when only the young branchlets, usually met with in the commercial drug, are available for examination. J. sabina and J. thurifera and its varieties have the leaves in pairs, each pair being at right angles to the succeeding pair, i. e., they are decussate. In J. phœnicea, on the other hand, the leaves are not decussate, but are arranged more or less spirally with five leaves inserted almost at the same level.

Mongin further shows that large sclerotic or stone cells are found in the mesophyll of the leaf of J. phœnicea and less abundantly in J. thurifera, whilst they are completely absent in J. sabina. Another point of difference is the continuance of the hypodermal layer over the resin duct in the leaf of J. phœnicea, while in J. sabina the resin duct abuts directly on to the epidermis.

In 1905, Freeman stated that there occurred in commerce in Great Britain a form of savin "with more convex, less acute leaves, which are so closely appressed to the stem as to give a cylindrical appearance to the branchlets, very different it is true from the typical savin, but so closely resembling some of the forms of J. sabina that in the absence of fruit it is impossible to separate them by a microscopic examination." (3).

From these references we may conclude that savin has been adulterated for at least 40 years.

For some time there have been large quantities of so-called savin on the market which consists of twigs resembling somewhat the twigs of J. sabina, but the leaves are more convex, less acute and have an oval gland. By careful inspection it is noted that the arrangement of the leaves is not the same on all twigs. The drug is a mixture of about one-half twigs whose leaves are in whorls of threes and one-half twigs having decussate leaves. Branching twigs showed a peculiarity in that the branch had decussate leaves while the leaves of the twig were in whorls of threes. The latter fact indicates that the pharmacopœia is at fault, for these branchlets answer its requirements while the main twig of the same species does not.

In microscopic sections of this substitute, both the decussate leaves and those in whorls of threes, show the following characteristics as brought out in plate 1;

large sclerotic or stone cells in the mesophyll beside the resin ducts and the hypodermal layer extending between the resin duct and the epidermis.

A pressed herbarium specimen of J. Sabina showed the leaves all decussate, apex decidedly acute, longer, less convex and the gland linear-oblong. Microscopic sections show the absence of sclerotic of stone cells and the resin duct abuts directly on to the epidermis as shown in plate II. These characteristics indicate that, according to M. Mongin, the pressed specimen is properly named and that this substitute is not obtained from J. sabina. The leaves of the commercial drug are not arranged spirally, hence it is not obtained from J. phœnicea and the

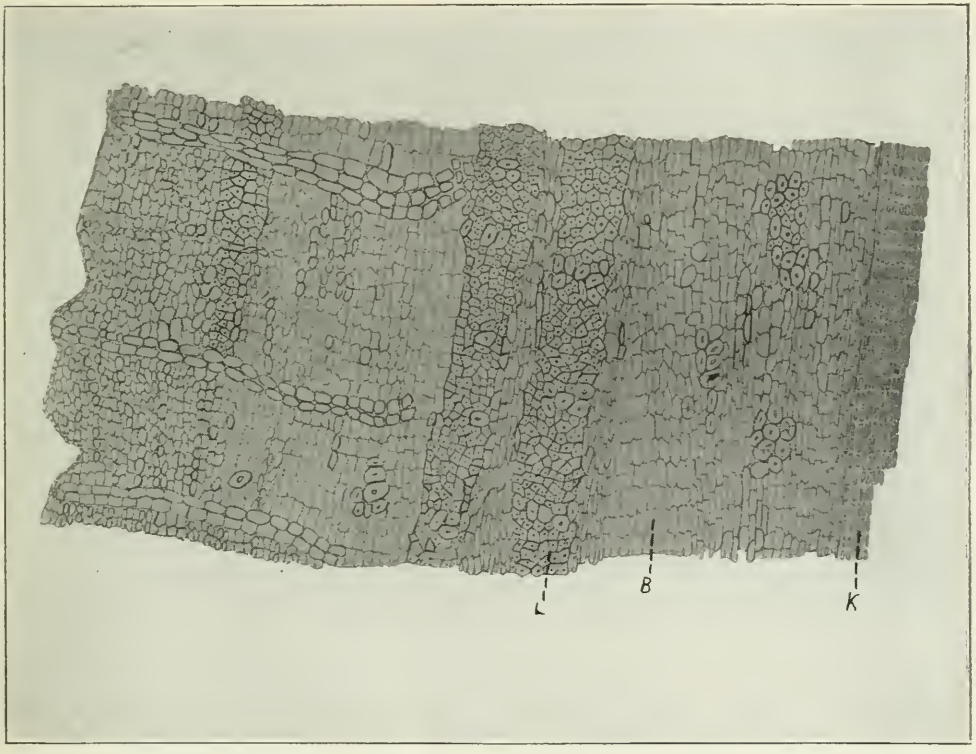


PLATE IV.

CRAMP BARK—COMMERCIAL DRUG—TRANSVERSE SECTION OF BARK.

B, Bark; L, Bast; K, Corky layer.

leaves are not all decussate, hence it is not J. thurifera. But pressed specimens of J. occidentalis, Hook, have short, oval, convex leaves with stone cells beside the resin duct and the resin duct separated from the epidermis by the hypodermis. This form shows the peculiarity of having the leaves in whorls of threes on the large branches, but the branchlets from these have decussate leaves. This indicates that the substitute which has been offered for savin is undoubtedly from J. occidentalis.

Three specimens of J. sabina obtained from the New York Botanic Garden show the following characteristics in contrast with those of this substitute; leaves

spreading, acuminate, all decussate no stone cells in the mesophyll and the resin duct abutting directly on to the epidermis."

In order to exclude all but J. sabina the pharmacopœial description should read as follows:—

Thin quadrangular branches bearing green, decussate leaves which are scale-like, ovate-lanceolate, acute or acuminate, appressed or spreading, imbricated; having on the back a shallow groove containing a linear-oblong gland; odor strong, penetrating, terebinthinate; taste disagreeable, resinous and bitter. In cross-section the leaves should show no stone cells and the resin duct abutting directly on to the epidermis."

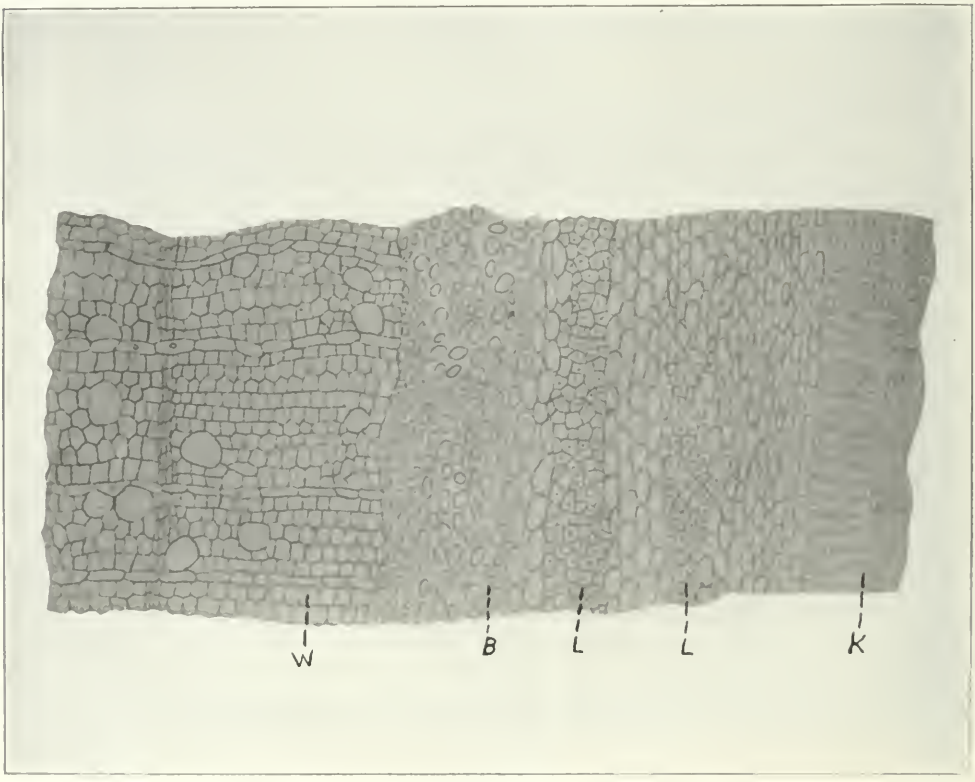


PLATE V.

ACER SPICATUM—TRASVERSE SECTION OF BARK AND WOOD.

B, Bark; L, Bast; K, Corky layer; W, Wood.

The fact that the pharmacopœia states that the leaves are dark green and have an oblong or roundish gland indicates that the description may have been made from commercial drug and not from known specimens of J. sabina.

Scoparius:—A more definite description would be obtained if, "Thin, flexible branched twigs, 2 to 3 mm. thick, externally dark green" were replaced by "Flexible, round light-green branches with five low, narrow ridges, 2 to 3 mm. thick; the smallest branches being uniformly 1 to 15 mm. thick, dark green, with five distinct wings."

Viburnum Opulus:—The pharmacopœia states, "The dried bark of Viburnum opulus *Linne,*" and then describes the bark of Acer spicatum. Consequently the Cramp Bark on the market for the last twenty years has been the bark of Acer spicatum and, although it answers the pharmacopœial description, it is not the bark desired.

In 1912, Nathan S. Slatter, of Bennington, Vt., discovered that the Cramp Bark on the market was not the same as the bark of Viburnum opulus, but was that of Acer spicatum. He exposed the fact to Oliver A. Farwell, of Detroit, who confirmed Slatter's statement by comparing Cramp Bark of commerce with authentic specimens of Viburnum opulus and Acer spicatum.

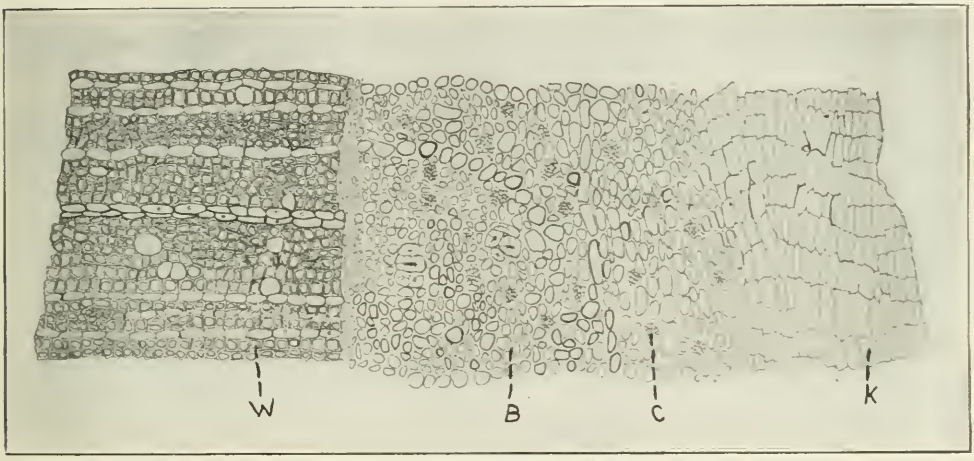


PLATE VI.

VIBURNUM OPULUS—TRANSVERSE SECTION OF BARK AND WOOD.

B, Bark; W, Wood; C, Calcium oxalate crystals; K, Corky layer.

1. H. H. Rusby in Merck's Report, Vol. XIX, p. 134.
2. Winton "Microscopy of Vegetable Foods," pp. 523 and 524.
3. "A Comparison of The Savin Leaves of Commerce," by Wm. G. Freeman in The Pharmaceutical Journal for Dec. 16, 1905, p. 829.
4. "Confusion Over Cramp Bark," by Oliver A. Farwell. The Bulletin of Pharmacy, Vol. 27, p. 65.

"Manual of the Trees of North America," by Charles Sprague Sargent.
"New Manual of Rocky Mountain Botany," Coulter and Nelson.
"Illustrated Flora of the Northern States and Canada," Britton and Brown.
"Flora of The Southeastern United States," John K. Small.
"Pflanzenfamilien," Engler and Prantl.
British Pharmaceutical Codex.

Farwell found that in 1895, a pharmacopœial committee of revision which tried to show the difference between Viburnum opulus and Viburnum prunifolium, used Acer spicatum for an authentic specimen of Viburnum opulus. This specimen was obtained from a large pharmaceutical manufactory and indicates that A. spicatum was used at that time for Cramp Bark. (4)

The sixth revision of the pharmacopœia under Viburnum opulus gives characistics undoubtely those of Acer spicatum. Such characteristics as "fracture tough, the tissues separating in layers," are surely not those of V. opulus, for the bark of the latter is very brittle and gives a sharp, clean fracture.

The findings of these two men led F. A. Miller to investigate the situation. He

obtained specimens of both Acer spicatum and Viburnum opulus from Arnold Aboretum, Missouri Botanic Garden, Baltimore Nursery, Kew Botanic Garden, and the German Botanic Garden. Sections and drawings of these were made and of commercial Cramp Bark. See plates 4 and 5. These drawings show clearly that commercial Cramp Bark is taken from Acer spicatum, for both show the bands of bast fibres and the absence of calcium oxalate.

The accompanying illustrations are representative of all the drawings made and show the desired points.

The pharmacopœia should replace the present description by the following:—"In transversely curved pieces or quills, of variable length, and one mm. or less thick; outer surface gray, longitudinally furrowed, small oval lenticels; inner surface brownish yellow, very smooth; fracture short and clean; transverse sections show an abundance of calcium oxalate crystals in rosettes, no bast fibres; taste at first bitter and then astringent."

Viburnum Prunifolium:—Two characteristics of this drug should be added which will aid considerably in its identification. These are the sour odor and the peculiar, short, smooth striæ on the inner surface of the bark.

Laboratories of Eli Lilly & Company, June, 1914.

REVIEW OF CURRENT PHARMACEUTICAL LITERATURE.*

PROF. JULIUS W. STURMER.

PHARMACEUTICAL ERA. (January.)

Stable Bichloride Solution:—Mercuric Chloride in aqueous solution containing also Sod. Silicate Sol. does not precipitate with ammonia. As the resulting ammoniacal sol. does not attack steel instruments, it may be found serviceable by the surgeon.

NOTE.—The author does not give bactericidal power of this solution as compared with ordinary Bichloride Sol. (J. W. S.)

Saccharin (and in particular its sodium salt) is converted into a bitter compound by action of fruit acids. The change takes place slowly at ordinary temperatures, more rapidly on application of heat.

CHEMICAL ABSTRACTS. (Jan. 20.)

Temperature of slaking lime:—1. At temperatures of about 270-300° wood is partially carbonized, and in the presence of oxygen, i.e., air, it ignites. A sample of lime from marble was found to attain a temperature of 390° during slaking, and the experiment proved that the slaking lime could ignite wood.

PHARMACEUTICAL JOURNAL. (Jan. 2.)

Ammoniated Mercury, constitution of:—The reaction with Hydrofluoric acid:— $2NH_2HgCl + 4HFl = HgCl_2 + HgFl_2 + 2NH_4Fl$ points to the formula $HgClNH_2$. That is, Mercuric Chloride with one Chlorine atom replaced by NH_2.

JOURNAL OF INDUSTRIAL AND ENG. CHEMISTRY. (February.)

Hard Wood Distillation Industry in America:—Interesting nine-page article by Edward H. French and James R. Withrow.

* Read before Philadelphia Branch, February meeting.

MERCK'S REPORT. (January.)

Viscose Sponges:—The viscose which forms a dough with Sod. Hydroxide is kneaded with hemp fibre, and Sod. Sulphate Crystals are imbedded; then oval cakes are formed and immersed in Dilute Sulphuric Acid, which hardens the viscose. Finally, the Sod. Sulphate Crystals are dissolved by means of water, thus leaving cavities, which give to the mass a sponge-like appearance.

BRITISH PHARMACEUTICAL JOURNAL. (Jan. 16.)

Magnesia Carbonate, absorptive power of:—The experiment reported consisted in placing pieces of camphor wrapped in three layers of paper upon a cube of Mag. Carbonate also wrapped in paper. After two months the Mag. Carbonate had only a feeble odor of camphor, but on triturating the Carbonate with water a stronger odor developed, and on dissolving the Mag. Carbonate by the addition of citric acid, the odor developed was equal in strength to that of Spirit of Camphor. Accordingly, it is reasoned that Mag. Carbonate, like Charcoal, must be kept in air-tight containers least it become contaminated with volatile drugs.

AMERICAN DRUGGIST. (January.)

Peroxide Creams:—The article points out that animal and vegetable fats cause decomposition of peroxides, and that these fats are therefore inadmissable in peroxide cold creams. Petrolatum, starch paste, tragacanth paste, and also glycerin are recommended by the author as being unobjectionable, and suitable bases for such creams.

Liquid Petrolatum:—(February. Reprinted from the Report of the Council on Pharmacy and Chemistry of the A. M. A.) The article deals with the limpid oils used for atomizer sprays, and with the more viscid oils, obtained principally from Russian sources and used in intestinal stasis.

DRUGGIST'S CIRCULAR. (February.)

Spurious drugs:—An article well worth reading by John Uri Lloyd.

THE WOMEN'S SECTION AND WOMEN PHARMACISTS.

ZADA M. COOPER.

The first clause of the second article of the Constitution of the Women's Section reads like this: "The object of this Section shall be to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood." Other objects follow, all of them laudable, but this one statement is the basis for what I want to say. Under the circumstances, I suppose I cannot be altogether altruistic, but one very practical way suggests itself to me, one that I believe would benefit not only women pharmacists, but be of great value to women generally. I am also firm in the opinion that it would mean increased business to pharmacists, a fact that should enlist the interest of the women of this section who are not themselves pharmacists. But for its length, a better title for this paper would be, "How to convince druggists, now employing only men, of the need of women pharmacists, also."

To come at once to the point, the Women's Section might formulate resolutions expressing women's preference for drug stores where they can do business with women pharmacists; stating also their belief in the advantage to business; and requesting pharmacists to consider seriously the employment of women. If the resolutions should be approved by the Association they would eventually reach all

the members through the Journal of the Association. Perhaps the expense of sending copies by mail might be justified. Some other journals might publish them also, so that practically all druggists would be reached. At least, all that are worth reaching, all that we dare to hope to influence could be reached in this way. The druggist who takes no drug journal is unworthy of the title. He must be a mercenary individual or depraved and beyond reach of reform.

It would take generations to accomplish singly what the organization could do in a few years. Even if each woman were to say to the pharmacists of her community that she would like to deal with women pharmacists, it would have little effect. Men would think it only an individual whim, but if the Women's Section as a part of a great national organization so expressed itself, it would be taken more seriously and would have much greater weight. Men have known the powers exerted by organized effort for many years, but it is in comparatively recent times that women have learned the importance of coöperation. Club work is probably responsible for their getting outside themselves and overlooking minor differences sufficiently to make team-work possible. Evolution has taken us beyond the sociological stage where we "worked alone in tragic seriousness, unrelieved by a sense of humor." It has led us out into a broader usefulness where we are willing to coöperate with others. This is only one of the opportunities opening to members of the Women's Section for united constructive effort.

Without doubt there are some men who are honestly opposed to women pharmacists. They may perhaps admit a woman's abstract right to enter the profession if she so wills; they may even admit her value in *some* stores, but personally will have nothing to do with her. Even if all the women in America were to express themselves as preferring to do business in a pharmacy where there was a woman, still they would employ only men, either because they want only men's business or else because they do not want a woman about the establishment. We shall not quarrel with them, that is their privilege. On the other hand, there must be quite a proportion of druggists who have not given the question serious thought, at least from the point of view of their women patrons and the advantage in the way of increased business. It might be only necessary to bring the subject to their attention, to let them know that women are thinking about it, that women want it. Fair-minded individuals would be likely to investigate and honest consideration would convince some, not because they are so eager to grant women's requests, but because it is a plain business proposition. Women would not make such a request if it were only a passing whim. They believe that the druggists would reap some benefit as well as please them.

It is only right that it be made plain that eighty-five *per cent.* of the general merchandise sold is purchased by women and that something like the same percentage could hold with a druggist's wares. In the face of such a fact, druggists ought to see the importance of pleasing women; if a woman pharmacist is a factor in making satisfied customers, there should be no hesitancy in employing her. It is unquestionably true that lack of women pharmacists drives women to department stores for all sorts of sundries like toilet articles and toilet preparations and rubber goods that are legitimate sidelines for a druggist. Once there, they are led to buy drugs also. The pharmacy that numbers among its employees

a woman should get both the drugs and the sundry business of these people. There could be no objection to a druggist advertising the fact that his force includes a woman. Of course, it should not be sensational in character, but it is certainly proper to call the attention of women patrons to her presence. Possibly an announcement by letter might be excellent. It would only be necessary to say in a few well-chosen sentences that she is a competent pharmacist and that she is there to serve the woman patrons.

In any appeal to men-druggists, the Women's Section should assert the belief that every pharmacy in America employing more than one clerk, and even some of those should have a woman. We must concede that a druggist in a small town where paints and oils and wall-paper are handled, must have a man, unless he wants to do all that work himself. But if he does not deal in sundries requiring for their handling considerable more strength than women possess, even in a village a woman pharmacist would be desirable. In fact, I am inclined to believe that country women and women in small towns might appreciate a woman pharmacist more than their city sisters because they are possibly more reticent if not more modest than women of the cities. In the larger pharmacy employing several people, the proprietor can have no good excuse for not having one woman—no good excuse; he may offer many that seem good to him, but if he is conducting a decent honorable business, that very business would be increased by having a woman. If his business is not honorable and clean he does not need a woman, for he will have few women patrons. Women soon learn to avoid the saloon drug store or the one that has had a reputation for catering to "dope fiends"—usually one and the same.

Now and then I hear the statement that women are not loyal to their own sex, that they do not have faith in their professional ability. For instance, it is said that a woman who is seriously ill wants a man physician, even though she is in the habit of consulting a woman physician for minor ailments. If this be true, then it would be natural to conclude that women would not have faith in the capability of the woman who compounds her prescription, for the medicine may involve life or death as truly as the physician's diagnosis. Following the reasoning to a logical conclusion, all of the preceding appeal is in vain, but of that I cannot judge. If the idea has merit, it may bring results; at any rate, it may do no harm.

SENNA DRUG TRADE DIVERTED.

The export of senna from Egypt has been prohibited except to the United Kingdom and France. This measure is expected to center in London the trade in this useful purgative drug. The United States has been importing 2,500,000 to 3,000,000 pounds of senna leaves yearly. The Alexandrian senna commands the highest price, the March, 1915, quotations in New York City being quoted at 35 to 40 cents per pound for whole leaves. The Tinnevelly leaves from India are quoted at 16 to 17 cents, while pods are priced at 6 to 7 cents per pound. The Egyptian senna leaves are derived from *Cassia acutifolia,* which grows in Nubia and Kordofan, while the Indian or Tinnevelly leaves are derived from *Cassia augustifolia.—U. S. Commerce Reports, No. 63.*

Proceedings of the Local Branches

BALTIMORE.

The March meeting of the Baltimore Branch of the American Pharmaceutical Association was held Wednesday evening, March 17, in the Hynson, Westcott & Company assembly room at Charles and Franklin Streets, with President E. W. Hodson in the Chair.

The Executive Committee reported in regard to publicity for the Harrison act, that interviews had been held, conferences had been attended, letters had been written, copies of the law had been sent out, personal talks had been made and that the daily papers had printed lengthy and frequent articles about it, so that it was considered that everyone concerned should be informed as to its workings.

It was also brought out that the internal revenue officials had ruled that doctors need only sign their surnames in full to prescriptions and that initials would do for their given names.

The regular program was "Factors from Facts," the Secretary presenting a few factors which have been of considerable value in the day's work, both as time-savers and short-cuts. Little journeys were made through four of the Drug Journals by Messrs. Neal, Meyer, Morgan and Lowry, it being the intention to present one or some of the important items from the journals each month.

Mr. Lowry read extracts from a paper which had been presented to the Association and explained, that, as the part read contained some factors, the use of which might have a tendency to postpone the exclusive use of the Metric system, that the parent body in its wisdom thought it best not to publish this part of the paper.

He uses them regularly and finds them so convenient, that he felt others might also find them useful. He said that he realized that the safest factors to facilitate the use of U. S. P. and N. F. or any formula in the Metric system, were the weights and measures themselves. Yet, when we buy by the ounce, pound, pint and gallon and sell in the same old-styled, cumbersome but popular, customary, ever-present and always-with-us way and have to figure out cost, profit and selling price on the same basis, the old way is very convenient. If we need exactly one gallon of a preparation and make four thousand cubic centimeters, multiplying the one thousand formula by four, we will have almost a half pint too much.

The factors presented were multiplying ones and were intended to be used when the formula called for 1000 cc. of finished product.

A gallon is equivalent to 58418 grains, or 61440 minims.

If a formula for a gallon of a preparation calculated for 1000 cc. is wanted, all that it is necessary to do, is to point off three places in either of these two figures and multiply the quantities in grammes by 58.418, the product will be in grains, which can be reduced to avoirdupois pounds, ounces and grains; and to multiply the quantities in cubic centimeters by 61.44, the product will be in minims, which can be reduced to pints, fluid ounces, drachms and minims.

If tables be kept of the number of grains or minims in each ounce from 1 to 16, as well as tables by 500's from 500 to 7000 showing the equivalents in ounces and grains and in fluid ounces, drachms and minims, the conversion becomes easy.

For pints, divide either of these factors by 8 for quarts by 4, for a multiple number of gallons, multiply by the number of gallons wanted.

As an example, the U. S. P. formula for Syrup Orange Peel was cited. To make one gallon take,—

Tincture Sweet Orange Peel....	50 cc.x	61.44 =	3072 mn.=6 oz.	192 min.
Citric Acid	5 gm.x	58.418=	292 gr. =	292 gr.
Magnesium Carbonate	10 gm.x	58.418=	584 gr. =1 oz.	147 gr.
Sugar 820 gm.x		58.418=47903 gr.	=6 lb. 13 oz.	215 gr.
Water, a sufficient quantity to make 1000 cc.x		61.44 = 61440 min.	=1 gal.	

Mr. Meyer mentioned that a quick way of approximating the price of a single item which has been priced by the gross is to multiply by .007. Example,—price $30.00 per gross, 30 x .007 = 21, or 21 cents.

A gross of an item priced at the thousand

will cost practically 1/7 of the thousand price. Labels costing $2.80 per M will cost about 40 cents per gross. 1/7 of 2.80=40.

In reviewing the journals, the article which seemed to create most interest was one entitled "The Gold Mines of Pharmacy."

This caused quite a lengthy discussion. Mr. Hynson remarked that pharmacy *per se* is better now than in the so-called "good old days," and is on a higher plane and that the men engaged in it are of as high a class as they ever were, but that it is the environment of pharmacy that has caused so many to misjudge it.

In the so-called "good old days," it was associated with paints and putty, oils and glass, *et cetera,* and now it is associated with so many diversified interests that in many cases the drug stores of to-day are, in reality, department stores and, although the environment is different, yet the pharmacy in these stores is, as a rule, conducted on a high plane, and in some of these the pharmacy department is almost ideal.

Mr. John F. Hancock, who began his apprenticeship January 30, 1854, talked of what he believed were the "good old days," and grew quite reminiscent, naturally having a very deep feeling for the men with whom he had been associated.

Mr. Meyer and Mr. Schulze both emphasized that the head of the store should set the standard and be a good example both for the clerks and the public, and Mr. Morgan sized up the situation accurately when he arose and ended the discussion by saying: "The proprietor should be the pacemaker."

In criticising answers given by the journals to some of the queries, it was pointed out, that in many cases the answers show a lack of real knowledge and are therefore misleading; one answer carried out the common misconception that ichthyol is soluble in oil while it is a water-soluble complex ammonium salt or salts.

In an effort to find a remedy for the great changes in colors in the guaiac, honey and acacia mixture rather much used in Baltimore, it was suggested that the acacia be heated to 100° C.(212° F.), thus destroying the oxydase, and while this treatment would kill the ferment, it would not effect the emulsifying properti s of the gum. The same treatment was suggested for drugs containing ferments which were useless medicinally and which caused trouble or decomposition in the finished product.

The mentioning of guaiac in this prescription caused Mr. James Hancock to say that he rejected a large shipment of the resin which contained 37 *per cent.* of "exhausted tolu."

Attention was called to a new insecticide, Para-Dichlorobenzene, which has been given the O. K. by the United States Department of Agriculture. It is a non-inflammable and inexpensive crystalline substance which readily vaporizes, and as this vapor is heavier than air, it is placed above the articles to be treated, the vapor penetrating to the bottom. It ranges from 23 cents a pound in 5-pound lots to 15 cents a pound in barrels.

In discussing cold creams, it was pointed out that the solution of borax should be heated to boiling and the melted fats should also be hot, the hot borax solution should be added to the hot liquid fat and the mixture beaten till cold. Ointment of rose water of the Pharmacopœia made this way was much superior to one made by strictly following the directions. No change in the formula is necessary.

WM. J. LOWRY, JR., Secretary.

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CHICAGO.

The March meeting of the Chicago Branch held Tuesday evening, March 16, was attended by a large number of druggists, the attractive feature being a discussion of the operation of the Harrison Anti-narcotic Law lead by the Deputy Collector of Internal Revenue at Chicago. Deputy Collector Mahany read the most recent rulings from the Treasury Department at Washington and answered many questions. He stated that more than 12,000 applications for registration had been filed at the Chicago office, that the extra work involved had nearly swamped the office force, but that they would soon have things running smoothly. A number of additional inspectors have already been appointed and a strict enforcement of the law is certain.

In the discussion two points were brought prominently forward: First, the tendency on the part of newspapers to unjustly stigmatize pharmacists as "dope sellers," and, second, the very exaggerated exploitation of "doping" by the newspapers to furnish "scare-heads." As President Craig put it, "every crime in

the calendar from chicken stealing to murder is ascribed to 'dope' using or to 'dope' fiends."

Dr. Beal presented a resolution to the effect that the Branch formally protest against a statement published in the Chicago Tribune over the name of Dr. W. A. Evans. This statement, quoted from The Pharmaceutical Journal, was ascribed to a druggist and was to the effect that for every ounce of laudanum used in compounding physician's prescriptions, he sold a gallon over the counter, mostly to dope users. Dr. Beal said that this condition was certainly untrue of American pharmacy and unjust to American pharmacists and that because a few unscrupulous or criminal druggists sold dope was not a reason why all professional pharmacists should be so condemned. No more so than that because ten thousand persons are arrested, charged with crime, every year in Chicago, every inhabitant of Chicago should be stigmatized as a criminal. The statement of one druggist in England to the effect that he sold dope should not be applied to American Pharmacy, and, furthermore, Dr. Beal strongly questioned whether this statement by any means represented a general condition of British pharmacy.

William Loesch, speaking for the Economical Drug Co., stated that his firm filling more than 400 prescriptions daily, used but two gallons of laudanum in 1914.

James H. Wells, also in the loop district of Chicago, affirmed that his store used less than one pint of laudanum annually.

W. K. Forsyth, in the business district of the South Side, stated that he used less than one gallon of laudanum yearly and that most of this was employed in one physician's prescriptions for liniments and that he sold no laudanum over the counter. C. E. Storer, a North Side druggist, uses annually less than one-half gallon of laudanum, and this mostly in veterinary prescriptions. S. K. Sass, a prominent West Side pharmacist, uses not more than 1500 cc. of laudanum annually, and this exclusively in prescriptions, and these largely liniments. Never sold any over the counter.

These statements and other similar ones made by pharmacists in attendance at the meeting were all positively affirmed to be true, and so far as their experience went the same condition is true in most of the other drug stores. Furthermore, the city code prohibits the sale, except upon prescription, of opium and its alkaloids, cocaine and other narcotics, and during the past year, despite the fact that a vigorous investigation has been carried on so that most of the eleven hundred drug stores in Chicago have been visited, the inspectors have been able to convict less than twenty druggists for violation of this law.

Dr. Beal's resolution was unanimously adopted.

E. N. GATHERCOAL,
Secretary.

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CINCINNATI.

The monthly meeting of the Cincinnati Branch took place at Lloyd Library, Tuesday evening, March 16, 1915.

The meeting proved a very interesting and enthusiastic one and was well attended by the members and their friends.

A special feature of the meeting was the presentation of a highly interesting paper by Dr. John Ranley, entitled "Relations Between Doctors and Druggists."

The way the doctor discussed the Theory and Practice of Ethics from the medical as well as the pharmaceutical view-point was instructive to the appreciative audience, and it led to a spirited discussion, in which a number of members took part.

Prof. Theo. D. Wetterstroem followed with "A few simple tests," same tests being capable of being applied by the pharmacist, and being mostly dependent upon the physical senses: Smell, sight, taste, hearing, touch, as well as the solubility, color reaction, chemical reaction, rotation and refraction of light. Of special interest may be mentioned the applied tests for fixed and volatile oils, as well as those determining mineral oils in linseed or similar oils.

The paper of Prof. Wetterstroem was appreciated by the members and, upon motion, was referred to the Committee on Progress of Pharmacy for further discussion.

The President appointed the following Nominating Committee, with instructions to report at April meeting: William Lakamp, Louis Werner, Fred W. Weissmann, Chairman.

CHAS. A. APMEYER,
Secretary.

DETROIT.

The fourth meeting was addressed on March 19, by Prof. C. W. Edmonds of the University of Michigan on the subject of "Twilight Sleep." Professor Edmonds' talk was extremely interesting and was listened to very intently by all present.

He traced the history of this treatment from the use of morphine and scopolamine by Dr. Schmeidburg as a surgical anæsthetic in 1900, to its application for obstetric purposes in 1902, and the development of the method since. Articles on the subject in popular magazines were referred to as sensational and misleading. The alleged difference between scopolamine and hyoscine he thought had no foundation in fact, and that differences in effects are more probably due to personal characteristics and the frequency and amount of the doses.

The pharmacology of the treatment was described in detail, then general conclusions drawn from a study of about 800 cases as to its value.

The method is designed to destroy the memory of pain rather than to entirely deaden the pain itself, and when properly used, this effect is reached. The mother comes through the ordeal with less exhaustion and probably less suffering than without it. It needs continuous watching by the physician, however, and sometimes induces delirium, and so is not adapted to use outside of hospitals.

The effect on the child is more questionable, since the scopolamine narcotizes the reflex centers and hinders breathing, and a few cases of the death of the child have occurred due to its use. It probably lengthens the time of labor, and increases the need of the application of forceps.

The paper was discussed by Drs. Judd, Kamperman and Bell, who agreed in general with Prof. Edmonds' conclusions. Prof. Schlotterbeck discussed the question of the identity of hyoscine and scopolamine, and declared that there is no ground for considering them anything but identical.

The next meeting of the Branch will be addressed by Prof. V. C. Vaughan on the subject of "The Poisonous Group in the Proteid Molecule." This will be a joint meeting held on April 19 in conjunction with the Wayne County Medical Society, and the Detroit Retail Druggists' Association.

WILBUR L. SCOVILLE, Secretary.

NEW YORK.

The regular meeting of the New York Branch was held in the New York College of Pharmacy Building, February 8, 1915, President Roemer in the chair.

After dispensing with the reading of the minutes of the preceding meeting, the Treasurer's report was received with thanks. Mr. McEhlenie reported that the Council had referred the election of an editor for the Journal to a special committee and asked for instructions. The following resolution, "That it is the sense of the Branch that its representative in the Council cast his vote for the candidate for Editor of the Journal recommended by the special committee having the matter under consideration," was adopted.

The chairmen of the committees on Membership, Legislation and Education, and Fraternal Relation being absent, no reports were received.

Dr. Diekman, Chairman of the Committee on Progress of Pharmacy as usual had a very interesting number of abstracts. Among others he read the following: Distinguishing between natural and artificial camphor, a criticism of the methods of identification and purity of Cera flava of the P. G., detection of caramel with phenol-sulphonic acid, a new method for melting point determination of fats, a method for the estimation of boric acid in ointments, the stability of phosphorous when dissolved in fixed oils, cod liver oil as a remedy for insect bites and its uses in destroying the mosquito, misbranding of codein tablets, as well as a list of recent foreign proprietaries.

Mr. C. O. Bigelow as Chairman of the "Mayo Dinner" Committee reported that a surplus of $1.55 was on hand. The committee was discharged with thanks and the surplus ordered turned over to the treasurer.

A communication from the Board of Estimate of New York City referring to the standardization of pharmaceutical conical graduates was received.

Dr. Jacob Diner of Fordham University then read a paper on "Serum Diagnosis."

The speaker briefly reviewed the progress of serum diagnosis, beginning with the work of Gruenbaum and Gruber, the results of which led up to what is now known as the Widal reaction for typhoid fever.

After discussing the theory of agglutination and the technic of the method, with some explanation as to how to obtain the serum,

and how to interpret results, the speaker led up to the second important step in serum diagnosis, viz.: the Wasserman reaction for the diagnosis of syphilis. The theory and technique were explained in detail, particularly the line of reasoning and experimentation that led up to the use of the so-called cycles or systems. After describing in detail the three essential factors necessary to produce hemolysis, viz.: 1, the blood corpuscles of the same species which were used for immunization, called *antigen;* 2, the specific immune bodies created by the immunized animal after frequent injection of that particular antigen, called *amboceptor;* 3, the substance destroyed by heating the immune serum (thermolabile) and restored by the addition of normal, non-immune serum, from animals of the same species, called *complement;* the speaker demonstrated how the reaction is carried out.

Brief mention of the work done by McDonagh and Klein in their application of the foregoing principle to the diagnosis of gonorrhea was followed by the description of the Abderhalden reaction first used to diagnose pregnancy in its early stages, based upon the presence or absence of ferments in the blood of the patient capable of digesting albumins and thus causing them to become dialyzable. This reaction is now largely being used in the diagnosis of cancer.

The very interesting paper was discussed at length by Messrs. Weinstein, Hohman, Roemer, Wimmer, Raubenheimer and Mayo.

Many queries were answered by the author. A rising vote of thanks was then extended to the latter.

During the transaction of routine business, President Mayo of the parent association entered, accompanied by Professor Hynson of Baltimore. They were given a rousing reception and responded with some very apt and well-chosen remarks.

JEANNOT HOSTMANN,
Secretary.

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NORTHWESTERN BRANCH.

The March meeting was held at the Nicollet Hotel, Minneapolis, Thursday evening, March 18, 1915. The meeting was preceded by a dinner and by a brief business session of the Minneapolis Retail Druggists' Association. As this was the annual meeting of the Branch, reports were received from the various officers, and the annual election took place. Secretary Newcomb reported briefly upon the work of the past year and referred to the sixteen new members acquired by the Branch since the last annual meeting.

The Nominating Committee reported the following names as nominations for office during the coming year: President, A. D. Thompson, Minneapolis; Vice-President, Truman Griffen, Minneapolis; Secretary-Treasurer, E. L. Newcomb, Minneapolis; Executive Committee, F. A. U. Smith, St. Paul; F. M. Parker, St. Paul; S. W. Smetana, Hopkins; A. J. Kline, Minneapolis. The names as presented by the committee were unanimously elected.

By motion the Branch voted an assessment of $1 upon each active member to defray the expenses of the Secretary in connection with the sending out of meeting notices, etc.

Communications were read concerning the preliminary report of the Transportation Committee and copies of the report were distributed among those present.

The Branch concurred in the resolution concerning the death of Mr. Frank W. Klenert, adopted earlier in the evening by the Minneapolis Retail Druggists' Association.

The regular program for the evening was as follows:

1. The Assay of Spiritus Aetheris Nitrosi and Acidum Hydrochloricum Dilutum, with demonstrations. By Prof. G. Bachman.

2. A continuation of the discussion on Spiritus Aetheris Nitrosi, Acidum Hydrochloricum Dilutum, etc., begun at the Scientific Section meeting of the Minnesota State Pharmaceutical Association. The best methods for the preparation and preservation of the above-named products.

3. The latest rulings on the Harrison Anti-Narcotic Law.

4. The State Anti-Narcotic Bill and its provisions.

Professor Bachman's demonstration of the assay of Sweet Spirit of Niter was highly appreciated by the members present and elicited many questions. The apparatus designed by Prof. Frank X. Merck was exhibited and its use demonstrated. Prof. Bachman submitted the following concerning Sweet Spirit of Niter and urged each pharmacist to give strict attention to this preparation in order that the physician may obtain the result which he has a right to expect:

1. Do not make up more than the quantity

sold within a month. Buy the concentrated Spirit Niter, preferably in hermetically sealed tubes. The conents of one of which will make a pint of Sweet Spirit of Niter.

2. Keep the Spirit in completely-filled bottles in such sizes as are usually called for by the trade and these should be stored in a cool place protected from light.

3. Air space in the bottle has much to do with the decomposition of the Spirit.

4. Do not expose the spirit to sunlight, as this is one of the chief causes for spoiling.

5. Amber-colord bottles afford good protection to the Spirit.

The paper by Prof. Bachman was discussed by Messrs. Griffen, Frost, Pres. Thompson, Dean Wulling, Schmidley, Kline, Danek and others. Mr. F. A. U. Smith explained in detail the reasons why amber-colored bottles afford a protection to the substance contained therein, which are susceptible to the actinic rays of light. Attention was called to the indiscriminate use of blue bottles for preparations which should receive the greatest protection from chemically active light rays.

Following this discussion, the matter of a joint meeting between Twin City physicians and Twin City pharmacists was brought up and after discussion, the following motion was unanimously passed: "Moved by Dean Wulling, seconded by Mr. Frost, that the Secretary be instructed to communicate with the Chairman of the Minneapolis Retail Druggists' Association and the Chairman of the St. Paul Druggists' Association, requesting each to appoint one pharmacist, who with a member of the Northwestern Branch, A. Ph. A., to be appointed by the President, are to constitute a committee of three to bring about not later than early May, a joint meeting of pharmacists and physicians of Minneapolis and later a joint meeting of pharmacists and physicians of St. Paul, the committee to have power to make necessary arrangements."

Mr. John P. Jelinek, Chairman of the Legislative Committee of the State Association, spoke on the state anti-narcotic bill and its provisions and urged the support of the Branch for the passage of the bill by the 1915 session of the Minnesota legislature. After some discussion, the bill was endorsed by the Branch.

About 50 attended the dinner and meeting.

E. L. NEWCOMB,
Secretary Northwestern Branch.

PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch was held on Tuesday evening, March 9, at the Temple College of Pharmacy.

President E. Fullerton Cook called the meeting to order at 8:30 p. m. The minutes of the last meeting were read and approved.

The Treasurer reported receipts $99.50, expenditures $40.75, balance of $58.75.

Mr. Thum moved that the Treasurer's report be acceptel. The motion carried, and Messrs. Quintus Hoch and J. Atlee Dean were appointed as a committee to audit the books.

The program of the evening was then taken up and Prof. Joseph P. Remington gave an illustrated description of the U. S. P. IX in various stages of its revision.

Prof. Henry Kraemer discussed "The Botany and Pharmacognosy of the U. S. P. IX."

Prof. Charles H. LaWall gave a summary of the changes in "Standards and Tests for Inorganic Chemicals in U. S. P. IX."

Dr. Robert P. Fischelis presented "The Current Review of Pharmaceutical Journals."

After the program had been concluded, Prof. F. E. Stewart ntroduced the following resolution:—

Resolved, That the Philadelphia Branch of the American Pharmaceutical Association hereby suggests to the Senate and House of Representatives of Pennsylvania that further legislation regarding the sale, possession, distribution and dispensing of habit-forming drugs be held in abeyance until a proper trial shall be given to the recently enacted Harrison Law intended for the control of the same, and that therefore further action regarding the bills now before the Senate and House relating to this subject be postponed in accordance with this resolution, and

Resolved, That a copy of this resolution be sent to the several state medical, pharmaceutical and drug organizations asking their coöperation in securing the postponement of further legislation regarding habit-forming drugs until the Harrison Law has been properly tried out as aforesaid.

The resolution was seconded by Prof. Remington and passed by ballot.

The Committee on Nominations was called upon for a report, and Mr. Joseph W. England, Chairman, presented the following report:—

Your Committee on Nominations would respectfully recommend the following nominations for 1915-16:—

President—S. C. Henry.
First Vice-President—J. W. Sturmer.
Second Vice-President—W. G. Neebig.
Secretary-Treasurer—J. Ed. Brewer.

COMMITTEES.

Practical Pharmacy—Charles H. LaWall, Chairman, O. W. Osterlund and J. C. Peacock.

Membership—A. J. Staudt, Chairman, Quintus Hoch, Frank E. Morgan.

Professional Relations—William L. Cliffe, Chairman, Francis E. Stewart, M. D., and Franklin M. Apple.

It was moved and carried that the President be instructed to cast the ballot for the officers as submitted by the Nominating Committee.

Prof. Remington introduced the new officers, preceding his introduction, with a short eulogy of each. The meeting then adjourned.

J. ED. BREWER, Secretary.

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PITTSBURGH.

The February meeting of the Branch took place too late in the month to permit of its proceedings appearing in the journal of that month.

Dr. Blumenschein referred to the action taken at a former meeting, at which time a resolution was adopted instructing the Secretary to ocmmunicate with the distributors of Creolin-Pearson calling attention to the erroneous practice of labeling that article "Non-Poisonous," and exhibited at this time a bottle of the article from which these misleading and dangerous words were omitted, which Dr. Blumenschein said shows the usefulness of our taking up such matters and acting upon them.

A communication was read from Mr. P. Henry Utech, of Meadville, Pa., offering to present an interesting paper at an early meeting upon the subject, "European Pharmacy and Pharmacists," based upon his travels with the German Apothekers Verein, in 1914. It was accepted with thanks, and Mr. Utech will present his paper at the April meeting.

Dr. Emile F. Krapf, of the Radium Co., of Pittsburgh, was introduced as the speaker of the evening, his lecture being on the subject of Radium, with illustrations covering many features of the production of that substance, and it proved to be the most valuable and intensely interesting talk the members have ever been favored with. The source, manner of securing the carnotite ore, pitchblende and autunite, method of applying radium in the treatment of disease, and the use made of Radio-active-Earth in plant growth and crop production were described. He also exhibited specimens of radium and made numerous tests of its powers. The radium facts presented were, as epitomized:—Discovered in 1896 by Madame Curie; the half life period of radium is 2000 years radium emits three rays known respectively as alpha rays, beta rays, and gamma rays; alpha rays are positively charged helium atoms, shot out with a velocity of 12,000 miles per second, beta rays are negatively charged particles, about 100 times as penetrating as the alpha rays and are of the same type as the cathode rays; gamma rays are analogous to X-rays, but more penetrating than the X-rays produced in a hard vacuum tube. Radium is extracted from carnotite ore, pitchblende and autunite. One gram of radium element represents about 400 to 800 tons of carnotite ore; seven hundred tons of chemicals, exclusive of water, are used in extracting one gram of radium. Twelve grams of radium element is the annual output of the Standard Chemical Co., of Pittsburgh, many times the entire European output. The price per gram of radium element is $120,000 to $160,000. Dr. Krapf exhibited numerous samples of ores, radio-active-earths, also clocks and watches the hands and figures being treated with radium so that the time can be readily seen in the darkest room.

A general discussion of the Harrison narcotic law was opened by Mr. Andrew Campbell, which threw much light on the law's provisions and its application.

Dr. George W. Kutscher, the new President, was inducted into office and in his inauguration talk promised to eliminate all the dead timber among the membership and utilize the live ones to the limit.

The March meeting on the 12th was treated to a very excellent paper by retiring President Andrew Campbell on the subject, "Hydrogenated Oils," from which we make but a short excerpt:

"Much has been reported and written about the possible wonderful cheapening of soapmakers' materials, but this has been considerably exaggerated, at least for the immediate future. As the process becomes better developed and more widely used very material reductions in price of the products may be reasonably expected. The two greatest apparent fields of usefulness for such

a process seem to be the production of edible fats and the bringing into range of soap-making materials vegetable and animal oils which have hitherto been unavailable on account of the relative softness of their products or for certain other technical reasons. Hardened oils will probably find other wide uses in the arts, for example in the manufacture of lubricants, but for the present the production of edible fats and of soap-making materials is of paramount importance in the development of the process."

BENJ. E. PRITCHARD, Secretary.

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ST. LOUIS.

At the March 19th meeting of the St. Louis Branch, Dr. H. M. Whelpley presented a paper on "How the Pharmacopœia is Revised." The paper was discussed by Francis Hemm, Leo Suppan, Julius C. Hoester, William Thaler, Carl T. Buehler, Miss Lydia Batdorf and J. W. Mackelden.

JULIUS C. HOESTER, Secretary.

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WASHINGTON.

The City of Washington Branch held its regular monthly meeting at the National College of Pharmacy, Wednesday, February 24, 1915; the subject for discussion was the Harrison Law and the regulation for the enforcement of same.

Mr. P. S. Talbert, Chief of the Law Division of the Internal Revenue Bureau; Dr. B. R. Rhees, who has immediate charge of the enforcement of the law, and Dr. O. B. Adams, Chief Chemist, Internal Revenue Bureau, were present and discussed the law and the regulations from the view-point of its enforcement.

After going into the history of what led up to the enactment of the law by Congress, Mr. Talbert gave figures showing that the annual importation of opium, its salts and derivatives for the past 10 years had been about eight times more than what is required for legitimate medicinal purposes and that of cocaine and its salts more than double all conservative estimates as to legitimate requirements. The Harrison law was discussed as to the manner of its enforcement by the Internal Revenue Bureau and he said he felt sure that highly desirable results would follow and develop the way for improvements in the future. He further expressed himself as highly gratified with the hearty coöperation of the trade generally.

Dr. Hubbard, chief of the division, that drafted the regulations, was unable to be present and his place was filled by Dr. Rhees, who made an explanation of the regulations as they affected every branch of the trade as well as the physician, dentist and veterinarian, external preparations were classed as those which were applied to the skin only and that did not come in contact with the mucous membranes whatever. The provisions with reference to registration, order blanks and inventories were so carefully gone into that there should be no question of doubt as to their provisions and what is required.

Dr. Adams spoke with reference to synthetic substitutes and explained that same could be considered from both a chemical and therapeutic standpoint, but what would be done with this question remained to be considered and determined later when regulations would be promulgated.

The members present participated in the discussion that followed and many points of value to physician and pharmacist were brought out. Joel Blanc made a strong argument in favor of a thorough trial of the law in every particular before any endeavor be made looking to amending same as has been already suggested. Dr. Kebler spoke along the same lines, and further said that the Bureau of Chemistry was in possession of much information that would be of much value to the medical fraternity if the facts were known, particularly in regard to the indiscriminate sale of habit-forming drugs in unexpected places in all of the large cities.

Dr. Henry P. Hynson took a most active part in the meeting and made a plea in closing the meeting that the indiscriminate sale and use of habit-forming drugs had long had a tendency to bring disrepute to both medicine and pharmacy and that both professions now had the opportunity, by making only slight sacrifices, to purge their ranks of such charges and elevate their respective professions. His remarks along the lines of compiling accurate records were most timely, and he made many suggestions of value as to the handling the stock of narcotics. He further stated that the law could not help but prove a blessing to physicians and pharmacists as well as a boon to humanity in curtailing the indiscriminate sale and use of habit-forming drugs.

S. L. HILTON, Secretary.

The March meeting of the City of Washington Branch was held March 24, 1915, at the National College of Pharmacy. The subject for discussion was the "Effect of the Harrison Law on the Pharmacy Act of the District of Columbia," by Mr. Alex. Muncaster, Professor of Pharmaceutical Jurisprudence, National College of Pharmacy.

His opening remarks, while usually correct, do not seem to fit in this particular case.

"Man whose privileges are curtailed by any law usually know more about the law than otherwise."

From the numerous questions that have been asked and the many inquiries made of the Internal Revenue Bureau and those connected with the drafting of the law, it would seem that this is not correct, for the reason that those affected have deferred considering this law until the same went into effect.

After taking up both Acts and discussing the main features of each as pertaining to the use and sale of narcotics, he clearly demonstrated by citing numerous court decisions relating to other laws, which would establish precedents sufficient, that both Acts could and would work in connection with each other without friction and that nothing contained in the Pharmacy Act of the District of Columbia had been repealed by the Harrison law.

Prof. Muncaster, further explained many sections of the Harrison Act and the regulations from a legal standpoint, that did much to clear the minds of those present. He said that numerous clauses of the law were apparently not as clear as was at first supposed, and that they would in the future require interpretation by the courts. As for instance, what are "synthetic substitutes?" Does this phrase apply to Cocaine, its salts or alpha or beta eucaine or any of their salts or simply to alpha and beta eucaine and their salts?

The requirement that the physician, dentist and veterinary surgeon keeping records shall state the name and address of the patient seems not to meet the situation of the veterinarian, should this not have provided that the kind of animal should be stated instead of the name and address? Then if this latter only is done, would it fulfill the requirements of the law?

The question as to whether a pharmacist should fill a prescription that was legitimate in every way and complied with the provisions of the law and regulations, for one ounce of morphine or a large amount of any narcotic drug coming within the provisions of the Act was discussed from every view-point, the opinion expressed was, that the law contained nothing whatever to prevent the pharmacist from so doing if all of the requirements had been complied with, it would, however, no doubt cause the Internal Revenue Bureau to make inquiries and scrutinize the said physician, who would be compelled to show that the same was in the legitimate practice of his profession and not for the use by *habitues*, if in this he failed he then would be amenable to the Act and would be liable to fine and imprisonment.

The opinion as expressed by the Deputy Commissioner of Internal Revenue relative to the procedure to be followed in the selling or disposition of a business licensed under the Harrison law was also presented, it is as follows:—

"A retail dealer desiring to dispose of his entire business, should notify the Collector of Internal Revenue of this fact and the purchaser of such business should make a sworn inventory of the narcotic drugs coming into his possession and keep this on file in his place of business.

Previous to the transfer of such drugs, the purchaser should make application to the Collector for registration and the order forms he will require. The purchaser cannot make use of the order forms in the possession of the person from whom he purchases the business.

The purchaser should, upon receipt of his registry number and official order forms, make use of one of the order forms, in securing the transfer of the narcotic drugs and file the duplicate order form with his inventory.

When such transfers are contemplated, application should be made to the Collector of Internal Revenue for permission to make use of the larger size order forms, provided by the government upon which to itemize the narcotic drugs to be transferred."

Not the slightest objection was raised as to this ruling, every one present believing some such method should be followed.

Considerable discussion of minor importance relative to the Harrison law and many questions were asked that were thoroughly explained and did much to assist in carrying

out the provisions of the law, after which the meeting adjourned.

The subject for discussion at the April meeting will be, "The quality of some drugs and pharmaceutical preparations examined in the Bureau of Chemistry," by Dr. L. F. Kebler. This should be a most interesting meeting and it is expected that conditions of a startling nature will be shown as to the quality of drugs on the market.

H. E. KALUSOWSKI, President.

S. L. HILTON, Secretary.

College and Society

UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

The annual Commencement of the University of Illinois School of Pharmacy (Chicago College of Pharmacy) will be held at the new Central Music Hall, 64 E. Van Buren Street, Chicago, on Wednesday afternoon, April 28th. Professor Joseph Price Remington, Dean of the Philadelphia College of Pharmacy, will deliver the address to the graduating class. President Edmund J. James will confer the degrees. The indications are that the graduating class of 1915 will be the largest in the history of the school.

In the evening of the same day the Alumni Association will give a banquet in honor of the graduating class. A feature of this banquet will be the reunion of the classes of 1890, who will celebrate their twenty-fifth anniversary.

The annual meeting and election of officers of the Alumni Association will be held at the School on Tuesday evening, March 25th, when the arrangements for the annual banquet will be made.

The members of the senior class have had the pleasure of listening to a course of six lectures upon pharmaceutical law given by Mr. Walter A. Murray. Mr. Murray is a graduate of the school, Class of 1906, and also a graduate of law school. He was able, therefore, to present the subject from the pharmacist's viewpoint and the students were very much pleased with the results of his effort. This is the first time that such a course has been given at the School, but it is planned to continue it as a regular part of the curriculum.

THE JERSEY CITY COLLEGE OF PHARMACY.

The series of social lectures at the Jersey City College of Pharmacy were continued on Friday, March 19th, when Dr. John Roemer, of White Plains, N. Y., delivered a splendid address on "Scientific Pharmacy" to the students of the College.

The lecturer gave a historic review of the growth of the manufacturing chemical and pharmaceutical industry, and the evolution of the dispensing doctor and the corresponding retrogress in retail pharmacy. He deplored the existing conditions in pharmacy and he severely criticised the constant growth of the "Patent Medicine" evil.

Dr. Roemer furthermore spoke on the many new laws which affect pharmacy and which not only act as safe-guards to the public health, but which furthermore place a great many restrictions and frequently unnecessary restrictions upon legitimate pharmacy. In spite of all these drawbacks the lecturer expressed the opinion that pharmacy will shortly undergo a great evolution and that scientific pharmacy is bound to come sooner or later. He advised the students of the College of Jersey City to make use of their pharmaceutical knowledge which they obtain during their course, in their future life as pharmacists. The utilization of this knowledge will gradually open up a field which at the present time has been unexplored, namely, that of Scientific Pharmacy.

The lecture was well attended by the students and the members of the Faculty of the College, and also by a number of visitors of the pharmaceutical and medical profession in Jersey City and vicinity.

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THE COLLEGE OF PHARMACY, STATE UNIVERSITY OF IOWA.

On February 19th, Dean Wilber J. Teeters read a paper before the Baconian Club on the subject of Narcotics and Dope. He discussed the source, composition, official and other preparations of habit-forming drugs, and explained the attempts at the legal control of the sale of these drugs. In the latter the Harrison Act was discussed. Dean Teeters had specimens of many of the so-called patent medicines which contain habit-forming drugs to illustrate his paper. After the usual colloquium the paper was discussed at length by

members of the faculties of the Colleges of Medicine and Dentistry.

Dr. F. M. Barta, '06, has been elected President of the Cedar Rapids Branch of the Bohemian National Alliance of America. Dr. Barta is also a graduate of the College of Medicine and is at present located at Cedar Rapids, Iowa.

A very comprehensive paper on the subject "Vanilla," by Prof. R. A. Kuever, appears in the February issue of the Ice Cream Trade Journal. It is a detailed account of the nature and source, origin, habitat and distribution of vanilla beans; commercial varieties, and methods of preparing—artificial or synthetic vanillin, Vanillism; Adulteration—imitations and artificial extracts; Definition—legal investigations; standards of analysis.

This paper was given as a lecture before the annual convention of the Association of Ice Cream Manufacturers of Iowa, and also before the annual Convention of the Nebraska Association of Ice Cream Manufacturers. The former convention was held in Des Moines and the latter in Omaha.

Dean Teeters was called to Omaha a short time ago to act as a member of a visitation committee for the American Conference of Pharmaceutical Faculties at Creighton College of Pharmacy. Other members of the committee were Prof. Caspari of the St. Louis College of Pharmacy and Dean Koch of the Pittsburgh College of Pharmacy, Chairman of the Executive Board of the Conference. Prof. Koch was a guest for a day at the home of Dean Teeters before returning to Pittsburgh.

The Pharmacist and the Law

SALE OR PRESCRIBING OF POISONS. MORPHINE—"LEGITIMATE USE."

Kentucky Acts, 1912, c. 86, makes it an offense for any registered pharmacist or licensed physician to prescribe for, procure for, or sell or dispense to any person opium or its alkaloidal salts or their derivatives or any admixture containing opium or its alkaloid salts or their derivatives, or otherwise deal in the same for any purpose other than for "legitimate use," under a penalty of a fine of not less than $20 nor more than $100. An indictment was returned under the statute against a regularly licensed and practicing physician, for prescribing morphine for a purpose other than for a legitimate use. The circuit court sustained a demurrer to the indictment, on the ground that it failed to charge that the morphine prescribed for and sold to the purchaser by the defendant, was an alkaloid or derivative of opium or an admixture containing opium, and the court could not judicially know or say that such was its character. On appeal, the appellate court said that, while morphine was not named in the statute, as an alkaloid, derivative or admixture of opium, it did not suppose there was a person, of ordinary intelligence or common understanding, residing in the state, but has familiar knowledge of its power as a narcotic, its deadly effect as a poison, and that it is an alkaloid or derivative of opium. The word "morphine" has as well-defined a meaning as the word "whisky" and its qualities and effects, are as well known to the generality of the people of the state, as are those of the intoxicant called "whisky"; and manifestly it would be a work of supererogation to allege in an indictment charging one with the unlawful sale of whisky, that it is a spirituous liquor or intoxicant. It was therefore held that the validity of the indictment was not effected by its failure to state that the morphine sold was an alkaloid or derivative of opium.

The defendant also insisted that the failure of the statute to define the words "legitimate use" rendered it void for uncertainty. In other words, it was argued that the statute fixed no standard, by which the physician in selling or dispensing opium, its alkaloidal salts or derivatives, is enabled to know what use of it by the purchaser would or would not be legitimate. The court, however, followed Katzman v. Commonwealth, 140 Ky., 124, 130 S. W., 990, where it had under consideration the validity of Section 2630, Kentucky Statutes, which regulates the sale of certain poisons by retail, and declares, in substance, that a sale or delivery of such poison shall not be made by any person, without satisfying himself that the poison is to be used for legitimate purposes, without defining the words "retail" and "legitimate purposes." A prosecution, instituted by warrant, against Katzman for violating this statute, resulted in his conviction, and he sought a

reversal of the judgment on the ground that the statute was void for uncertainty, because it failed to define the words quoted. The court held, however, that the statute was not void on this ground. It said, "It may be admitted that, although the meaning of the words 'retail' and 'legitimate purposes,' as used in the statute, are reasonably well-understood, it is nevertheless possible that there might be difference of opinion as to whether, in a given state of case, the sale of a drug was by retail or for a legitimate purpose, and it is possible that in administering this statute, it may occasionally happen that a druggist will be accused, who claims not to know what constitutes a sale by retail, or what a legitimate use of opium; and it is also possible that different trial courts and juries may not always be harmonious in the conclusions reached upon this point. But the fact that there may be occasional doubt or want of agreement on this question cannot be allowed to invalidate the statute."

The opinion then proceeded to state that a person who has intelligence enough to conduct a drug store, could not fail to know what would constitute the selling of a drug by retail or to understand the meaning of the words "legitimate purposes" as used in the statute; that the druggist must, as declared by the statute, first satisfy himself that the sale of the drug or poison, is for a legitimate purpose; and that, if he, in fact, does not know the purpose for which the poison is to be used, or has any doubt about it, then he must, in good faith, exercise reasonable care to find out the purpose for which it is bought. "The statute," it was said, "was intended to regulate sales by druggists, and when it is sought to apply the words 'legitimate purposes' to a sale of drugs or poisons by druggists, they have a technical meaning that may not be clearly known or understood by courts or jurors, and so it is permissible to allow experts to give evidence as to what is regarded by qualified druggists and physicians as legitimate purposes for which sales may be made, so that the trial court and jury may be informed as to what is recognized as a legitimate purpose, for which these drugs may be sold by those intrusted with their sale, and to whom, in a measure, is confined the knowledge as to what constitutes a sale for legitimate purposes."

The court held that this reasoning must control in the construction to be given the words "legitimate use." The word "legitimate," in the statute, was not used in its original sense of *lawful,* but in its secondary sense of *proper* or *warranted,* as when we speak of a "legitimate conclusion," or a "legitimate argument." Morphine is sold for legitimate purposes, under the statute, when, under the facts, a druggist or doctor, acting according to the ordinary usage of the profession, and exercising ordinary care, would have made the sale. This, it was held, was a question for the jury. The judgment was therefore reversed, and the cause remanded for further proceedings.

Commonwealth v. Garhart, Kentucky Court of Appeals, 169 S. W., 514.

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ADULTERATION—ICE CREAM DEFICIENT IN BUTTER-FAT.

In proceedings for selling ice cream deficient in butter fat in violation of the Pennsylvania Ice Cream Act March 24, 1909, it is held that the title of the act, reading, "An act for the protection of the public health and to prevent fraud in the sale of adulterated or deficient ice cream, fixing a standard of butter-fat for ice cream," gives sufficient notice of the contents of Section 4, which provides that "no ice cream shall be sold within the state containing less than seven *per centum* of butter-fat, except where fruits or nuts are used for the purpose of flavoring, when it shall not contain less than six *per centum* of butter-fat." The act was held to be within the police power of the state, though ice cream below the standard set, is not injurious to health. Ice cream, it was said, enters so largely into the food supply of the public, as to have become a proper subject of legislation, especially in view of the opportunities which its manufacture affords to practice imposition. In the popular understanding, it is largely composed of milk of which butter-fat is an important constituent. If by the exercise of ingenuity, and by the practice of unwarranted thrift, a product can be put upon the market having the name and appearance of ice cream, but lacking the chief element which gives it value as an article of food, a large opportunity would be afforded to dealers in that article to profit by deception, and it is the opportunity for such deceit of which the police power takes notice and seeks to take away. "It has been the policy of this state," said the court, "to legislate on the sub-

ject of milk and milk products, and statutes have been enacted which made it unlawful for any person to sell milk which contained less than a fixed percentage of butter-fat and less than a fixed percentage of mixed solids, making it unlawful to sell cream which contained less than a fixed percentage of butter-fat which classified cheese and fixed the percentage of butter-fat which the various classes of cheese should contain; and similar legislation has been enacted in other states. Legislation of a like character is found in the act of May 21, 1901 (P. L. 275), forbidding the sale of vinegar which contains less than four *per cent.* of absolute acetic acid. If the sale of pure milk containing less than three and one-fourth *per cent.* of butter-fat may be prohibited, it is not apparent why the same principle does not apply to ice cream. Milk is a natural product—wholesome and useful for food. The milk of many cows contains less than three and one-fourth *per cent.* of butter-fat. The owners of such cattle have a constitutional right to sell the product of their dairies; but this right has been held to be subordinate to the public welfare, and this welfare demands that a fixed minimum standard of butter-fat shall exist in the whole milk sold in this commonwealth. The known disposition of some dealers to cheat, and the opportunity afforded them by the absence of some regulation of the business, is the justification of such legislation under the police power." Although the dairy and food commissioner was specially charged with the enforcement of the provisions of the act, it was held that a prosecution thereunder need not be commenced by him, but may be brought by any citizen.

It was shown by the evidence that a pint of ice cream for the sale of which the defendant was prosecuted had been analyzed and found deficient in butter-fat. It was held not error to exclude the evidence of experts to show that samples taken from other parts of the same can might show different percentages of butter-fat.

Commonwealth v. Crowl, Pennsylvania Supreme Court, 91 Atl. 922.

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FOOD AND DRUGS ACT—"ADDED" DEFINED—MISBRANDING.

In a proceeding to condemn a quantity of a syrup called Coca Cola on the ground that it was adulterated and misbranded, the Circuit Court of Appeals made the following rulings. Forfeiture was claimed under the Federal Food and Drugs Act. It was held that the word "added" in section 7 of that act, declaring that an article shall be deemed to be adulterated if it contain any added poisonous or other added deleterious ingredient which may render the article injurious to health, implies the existence of a standard, and an element necessarily used to create a standard is not added. If caffeine was the addition to Coca Cola, as the complainant claimed, what was the base? For 15 years before the passage of the act, Coca Cola had been an existing article of food. It was a compound; it had no distinctive base (unless water, by reason of its larger proportion); it was made up of water, sugar, caffeine, phosphoric acid, glycerine, lime juice, coloring matter, flavoring matter and "merchandise No. 5." The test that whether the deleterious ingredient is "added" is whether this ingredient is in its natural or in an artificial form may often be a useful aid in applying and interpreting the statute, but it cannot be applied where artificially compounded foods are under consideration. In construing clause 5 of section 7, it is necessary to consider section 8 of the act, providing that an article of food which does not contain any added poisonous or deleterious ingredient shall not be deemed to be adulterated or misbranded, in specified cases, and when so construed, the act requires a standard before there can be any added ingredient or adulteration.

The act, it is held, makes no distinction between compounds known at its date and those thereafter devised, but it does not absolutely forbid the use in any compound of any element that a jury may call deleterious. Congress, having selected and regulated the use of those things known to be particularly dangerous, has not wholly forbidden other things from which no serious danger need be anticipated. The word "added" may be construed as being used with reference to a possibly deleterious food ingredient beyond the quantity in which the ingredient is normally found in usual or customary articles of food, and no such ingredient should be considered as added, provided it is present only in the quantity in which it existed in common articles of foods generally known. So construed, caffeine is not an added deleterious ingredient of Coca Cola.

The compound known as Coca Cola was held not to be misbranded, the name being a

distinctive name of the product of the manufacturer thereof and of nothing else. "Coca" is indicative of one article, and "Cola" of another distinct article, and the combination was not descriptive of any substance or combination known until adopted by the manufacturer, and is still unknown as an appelation for any other substance on the market.

United States v. 40 Barrels and 20 Kegs of Coca Cola, C. C. A., 215 Fed. 535.

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IMPURE FOOD SERVED BY RESTAURANT KEEPER—REMEDY OF GUEST.

Action was brought against restaurateurs for damages for the injurious consequences of eating a dish of "creamed sweetbreads" in the defendants' restaurant. It was alleged that the food was "sold" to the plaintiff, and that its sale was attended with the implied warranty that it was wholesome and fit for consumption. The case being made to rest upon the existence of implied warranty of quality, if there was no such implied warranty there could be no recovery. The defendants contended that the furnishing of food to a customer by restaurant keepers does not constitute a sale, and that therefore there was no implied warranty.

A restaurant keeper, it was held, differs from an innkeeper in that he furnishes only food, or food and drink, and not lodging or shelter. In so far as the character of the service performed by a restaurant keeper and innkeeper to their respective patrons is concerned, it is the same. In neither case does the transaction, in so far as it involves the supply of food or drink to customers, partake of the character of a sale of goods. The essence of it is not an agreement for the transfer of the general property of the food or drink placed at the command of the customer for the satisfaction of his desires or actually appropriated by him in the process of appeasing his appetite or thirst. The customer does not become the owner of the food set before him, or of that portion which is carved for his use, or of that which finds a place upon his plate, or in side dishes set about it. No designated portion becomes his. He is privileged to eat, and that is all. The uneaten food is not his. He cannot do what he pleases with it. That which is set before him or placed at his command is provided to enable him to satisfy his immediate wants, and for no other purpose. He may satisfy these wants; but there he must stop. He may not turn over unconsumed portions to others at his pleasure, or carry away such portions. The true essence of the transaction is service in the satisfaction of a human need or desire —ministry to a bodily want. A necessary incident of this service or ministry is the consumption of the food required. This consumption involves destruction, and nothing remains of what is consumed to which the right of property can be said to attach. Before consumption title does not pass; after consumption there remains nothing to become the subject of title. What the customer pays for is a right to satisfy his appetite by the process of destruction. What he thus pays for includes more than the price of the food as such. It includes all that enters into the conception of service, and with it no small factor of direct personal service. It does not contemplate the transfer of the general property in the food supplied as a factor in the service rendered.

In no other case does there appear to have been made an attempt to recover for the harmful consequences resulting from unwholesome food or drink supplied by the keeper of an inn, restaurant, or boarding house in the line of his business upon the strength of an implied condition or warranty of quality. Those which have grown out of a sale by a dealer are not in point. There being no implied warranty as contended for, the court said that the remedy of a guest at a restaurant injured by impure food served to him must probably be based on the negligence of the proprietors.

Merrill v. Hodson, Connecticut Supreme Court, 91 Atl. 533.

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WHERE POSSESSION OF COCAINE A MISDEMEANOR.

North Carolina Laws, 1913, c. 81, Sec. 2, makes possession of cocaine by a person other than a physician, dentist, veterinary surgeon or druggist, unless obtained *bona fide* on a prescription, a misdemeanor and declares possession *prima facie* evidence of violation of the statute. It is held that the finding by an officer, of cocaine in large quantity in a secret scuttle-hole, covered by a picture, over a kitchen door, in a house rented and occupied by the defendant, is sufficient to establish possession within the statute.

State v. Ross, North Carolina Supreme Court, 83 S. E. 307.

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Omaha, Neb.

REINSTATED SINCE FEB. 18, 1915.

GILBERTSON, L. S.,
Snohomish, Wash.

FISCHER, RAY O.,
Jefferson, Wis.

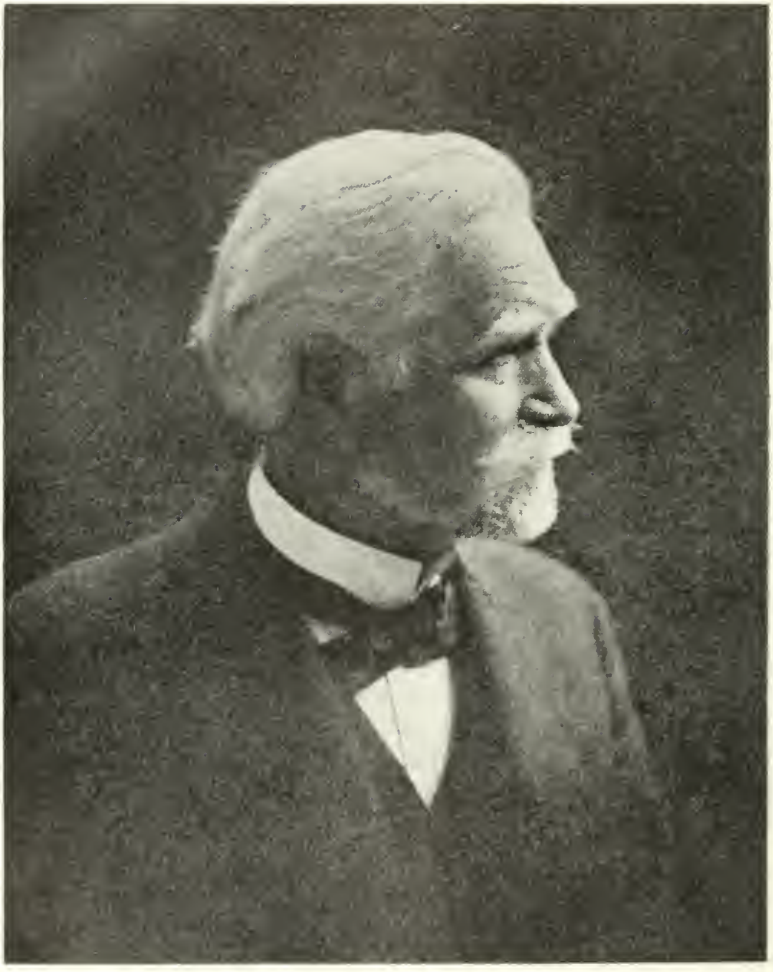
A NEW INSECTICIDE.

"Para-dichlorobenzene" is a chemical compound only recently used as an insecticide, but which, in being noninflammable and comparatively inexpensive, possesses advantages over other fumigants. The United States Department of Agriculture's new bulletin (No. 167) is entitled, "Para-dichlorobenzene as an Insect Fumigant," and points out that the compound, although deadly to insects, is harmless to human beings under ordinary conditions, and does not have an odor which clings to fabrics, as do many insecticides.

Para-dichlorobenzene is a colorless crystalline substance which evaporates very quickly as a vapor, if exposed. It costs 15 cents per pound in barrel lots.

Albert Benjamin Prescott

Albert Benjamin Prescott was born at Hastings, N. Y., December 12, 1832, and died at Ann Arbor, Mich., February 25, 1905. When nine years old he had a fall which made him an invalid for several years, thus making him dependent upon an older sister and private tutors for his early education. For some time he was correspondent for the New York Tribune and later taught in the public schools near his home. In 1860 he entered the medical department of the University of Michigan and graduated in 1864. He at once entered the federal army as assistant surgeon, and was later appointed the chief surgeon of the Jeffersonville Medical Hospital. At the close of the war he returned to Ann Arbor as assistant professor of chemistry, being advanced to a full professorship in 1870. Later he received the degree of doctor of philosophy and the honorary degree of doctor of laws. At the organization of the school of pharmacy in 1868 he was elected professor of pharmacy; in 1876 he was made dean, a position which he filled until his death. He was president of the American Pharmaceutical Association in 1899-1900, president of the American Association for the Advancement of Science in 1901, a member of the United States Pharmacopœial Convention from 1880 to the time of his death, and contributing editor of the Druggists' Circular, 1884-1886. He deserves distinction as a benefactor of pharmacy during the past half century, although not a pharmacist in the ordinary acceptance of that word. It was his steadfast stand for higher and better pharmaceutical education and ethics that places him high among those that have benefited the calling.



Albert Benjamin Prescott, 1832-1905

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Contributed and Selected

EMPIRICISM VERSUS SCIENCE.

JOHN URI LLOYD, PHAR. M.



Whoever attempts to individualize a scientific problem, becomes aware of the fact that, whatever it may be, it wedges into and dovetails with other problems from which no exact line of demarcation can be drawn.

A conspicuous example in this direction, contributed by the writer to the American Pharmaceutical Association Proceedings, 1879, is the fact that percolation and maceration cannot be, in the act of percolation, separated from each other. In fact, the very beginning of the process of percolation includes maceration, and during the process of percolation, maceration is a continuous factor. This, after an elaborate series of experiments and arguments connected therewith, the writer summed up, *American Pharmaceutical Association Proceedings,* 1879, as follows:

"In percolation, from the instant the stratum of menstruum commences to penetrate the material until it escapes we have maceration connected with alteration of the position of the mass of the liquid. There are continually new surfaces of contact formed as the liquid passes downward towards the exit of the percolator, and, as has been shown, in maceration this

phenomenon is also presented. There is no rest within the vessel while solution progresses. Mediums of greater specific gravity than the original menstruum are constantly forming, which, obedient to gravity, seek the lowest portion of the vessel, in turn to be displaced by heavier liquids. In this way during maceration numbers of percolating currents are flowing throughout the capillaries, and between the interstices of the material, as in percolation, while fresh portions of liquid are continually coming into contact with new surfaces, and saturations are giving way with perfect regularity to those not saturated.

"Thus circulation of currents progresses and will continue until an equilibrium is established, as long as there is soluble matter and unsaturated menstruum within the percolator, and afterward whenever the temperature is permitted to change. Therefore, maceration cannot be disconnected from percolation, and as we have seen, percolation must include maceration."

Let us apply the above as a text to "Empiricism versus Science," between which there would seem to be, as some view it, a clearly-cut line of division, but between which, in this writer's opinion, a sharp line of demarcation can no more be drawn, than between percolation and maceration. They, alike, wedge into each other; they dovetail, one into the other, and, each a part of the other, pass into thought and practice, even as scientific thought and study unite with empirical experimentation.

Placing ourselves, even superficially, in the position of the searchers after knowledge in days gone by, it becomes evident that, at an early date, theoretical or speculative processes gradually dominated the then scientific field, including chemical and therapeutic activity. In this direction, also, there seems to be no doubt that a connected religious process was injected, as a dominating influence, into all "material" problems, (even into such a study as entomology) in days gone by. Indeed, one needs go but a few centuries back, to discover that religious thought and complications dominated those engaged in the experimenter's field of that day, in a direction which even today is, by some, considered wholly materialistic, as though there could be any separation of matter and force, spirit and substance.

Be that as it may, there came a time when a section, at least, of the searchers in scientific directions rebelled against what were then considered ethically correct precepts, demanding that whatever was theoretically announced, must be practically demonstrated. It seems to be apparent that some of these revolutionists went even further, and proposed to establish the reverse of existing methods, by demanding that theory be subjugated to experiment, arguing, probably, that experiment established fact; that seeing a thing, was knowing that the thing existed; that touching an object proved that the object was there; that reactions between different materials were self-evident facts, and that the processes known as "Sensuous Experience," were the sole source of all ideas and knowledge. In other words, mental philosophy and theory were, by these reactionists, subjugated to what might be called the mechanical phases of elementary reactions. Thus, the therapeutic *experimentalist* demanded that all theory must be based upon experimental fact, and in contra-distinction to what in medicine might be defined as an entrenched, dogmatic school, he became, himself, a dogmatic skeptic.

"Their chief point of view was that of practical observation, as opposed to the theoretical speculations of the dogmatic school."—*Encyclopedia Americana.*

Thus came into the early field, as resisters of theoretical "dogmatism," a class of men who, scarcely less dogmatic, demanded that experiment be made primary, and theory secondary. To these people were given the name "Empiricist," de-

fined by the *Century Dictionary* as "one who believes in philosophical empiricism; one who regards sensuous experience as the sole source of all ideals and knowledge," a definition yet employed by many authorities in the world's literature.

To state it briefly, although Locke is by some regarded as the father of modern empiricism, it is evident that from a very early date, perhaps from all time, the principles involved in what is known as empiricism, have threaded the processes of dissenters less conspicuous than Locke.

We need scarcely refer to the fact that when empiricism in medicine and connected problems wedged itself into conspicuity, it became necessary to attack the entrenchments of previously established philosophical doctrines. The resistance that naturally followed created friction, and parties often needlessly became rivals, when, in this writer's opinion, they should have been allies, engaged in a common cause, but in different lines of thought and action. Be this as it may, in the time of Celsus and Galen, physicians became antagonistic to professional methods of the past. They laid great stress on physical changes, and often illogically excluded all-important theoretical study.

Thus the pendulum swung from a dogmatism in one direction to a dogmatism in the opposite direction, although, unquestionably, thinking men of all times profited by and gave credit, knowingly or otherwise, to the practical result of the combined efforts of all concerned.

Following the dogmatism of past theoretical doctrines, came a tendency on the part of the devotees of entrenched empiricism, to be not less overbearing than had been their predecessors. Remedies were so illogically described and prescribed, by reason of isolated individual experiences, as to bring discredit on the cause of the empiricist, to such an extent that, at a period perhaps impossible to determine, the name itself began to degenerate from its original meaning. The experimenter, or empiricist, unquestionably became hopelessly lacking in the direction of systematic, reasoning opportunities. The empiricist physician, relying too implicitly on the "unprejudiced observation of Nature," and believing that such observations must lead to unalterably perfect prescriptions, thereby lost his opportunity. Once more the pendulum swung back. The name "Empiricist" carried now with it the thought of an inadequate experimenter, whether in pharmacy, chemistry or medicine, and thus, rightly or wrongly, degenerated from the ideals of the past.

Having thus touched, briefly and superficially, a few of the changes that came through great periods of time, this writer does not hesitate to declare that, for himself at least, the name "Empiricist" has no terrors, nor can the word "Science" rightfully exclude experimentation. The man of science needs be gifted in experimentation, and the man who experiments needs be trained in scientific thought and action. As the man who percolates according to modern methods unites his efforts with those of the man who macerates a drug according to preceding processes, so does the true man of science today depend upon the experimenter of yesterday.

The man involved in pure scientific reasoning, foreseeing an opportunity by reason of his theoretical knowledge, devises a theoretical process that, without having yet been instituted, he accepts must give a satisfactory, experimental end-reaction. And yet, his theoretical knowledge is probably based upon previous observations by the experimenting chemist or pharmacist, whose reports concern-

ing changes observed, give to the advancing scientist his theoretical opportunity. Had not Sir Isaac Newton followed the line of reasoning instituted by the apple that before his eyes fell from the tree, perhaps for some time the study of gravitation would have been neglected. How could the astronomer of today predict with exactness the period of eclipses of moon or sun, but for the disjointed observations made by empiricists of times gone by, who noted and recorded the coming and the passing of the periodical eclipses? Did Madame Curie theorize in advance that the waste earth experimented with in her laboratory would yield the marvelous substance, *radium*, or, with a ray of experimental light before her, did she discover that substance through careful and thoughtful experimentation? And, without subsequent experiments, could the man involved in reasoning science, have given or accepted a theoretical explanation for the wonderful phenomena that radium presents to humanity?

Thus, in any line of reasoning or of experiments, we find that one dovetails into the other; that as one advances, so does the other; that the materialist, if so you will call him, and the theorist, are dependent, each upon the other. The theorist ventures into untried, experimental fields, with the suggestive thought, based upon past experiences, that such and such an action will follow. The materialist, following his lines of systematic experimentation, in turn presents to the theorist (perhaps himself) opportunities for mind research and explanation. But, above all, each should be ready, with an open mind, to catch the unexpected, for accidental discoveries may accrue, (as in the case of Madame Curie), and be of the greatest service to humanity, as well as of the greatest interest to the theorist. Together, they become "Science."

When La Place, reasoning from calculations made by observing the motions of the heavenly bodies, directed astronomers to point their telescopes to a certain part of the heavens where never a planet had been seen, predicting that there a planet would be found, did he not, mathematically, utilize the results of empirical observation, with the same certainty that the scientific man of today utilizes the results of the recorded observations of the empiricist who brings to him the report of experimental phenomena not before observed? This writer then asks, if there be a line of division between Empiricism and Science in chemical, pharmaceutical and therapeutic action, that each should regard the other as a friend and as an ally, in the cause of professional advancement.

In the opinion of this writer, as has been stated, rational experimentation cannot be separated from systematic thought and theories, nor can theoretical science separate itself from reactions observed in materialistic directions. No opprobrium should therefore be cast upon the man whose line of activity leads him into unknown fields of experimentation, nor should any touch of satire be cast by such a man upon him who, without experimentation, moves the world onward, by his scientific reasonings and deductions.

As one who comes into close touch with many men in advanced science, but whose field of activity is largely engrossed by empirical experimentation, this writer believes that the utmost cordiality exists today between advanced men engaged in these different spheres of activity, and that the true scientist no less regards the usefulness of an experiment that for the present may seem to be fruitless, than does the thinking empiricist deny the fullest credit to the man who perhaps never practically touches a materialistic, experimental object

INTERNATIONAL CONGRESSES VS. THE EUROPEAN WAR.

JOSEPH P. REMINGTON.



The European war has come as a staggering blow to international work of every description. When the last shot has been fired and the dove of peace hovers over the world, it will remain to be seen whether international congresses will resume their meetings and whether these meetings will be harmonious, whether the passions of men, excited as they have been by militarism, will continue, or whether the reaction will cause men to forget the horrible disasters of the war and meet again to discuss and develop the peaceful arts.

That the United States of America may become the mediator is a "consummation devoutly to be wished." The almost unanimous feeling in this country is that the terrible carnage which now prevails should soon cease and peace and good will once more prevail.

It is greatly to be hoped that The Netherlands will escape further complications and that the Féderation Internationale Pharmaceutique, which has done so much in organizing scientific pharmacy throughout the world, will emerge triumphantly when peace is declared and in the rebound obtain greater influence than ever in its uplifting work.

It is a cause for congratulation that the American Pharmaceutical Association is a member of this International Federation, and surely it can be depended upon to join hands with Holland by assisting in the upbuilding work.

It is not likely that any international congresses will be held during 1915. The pharmacists of The Netherlands have had a most serious mission and they are busily engaged in raising funds to keep a large number of refugees, Belgians and others, from starving. What greater work can be done for our fellow craftsmen who have lost everything during the war?

The International Congress of Applied Chemistry, which met in September, 1912, adjourned to meet in 1915 in the city of St. Petersburg, Russia. It could not be foreseen by any one who was present at the notable meeting in New York that two years afterwards would see another side for chemical industries and death dealing explosives replacing the manufacture of health-giving chemicals to be used in the healing of the nations. The Ninth International Congress of Applied Chemistry will literally never meet at St. Petersburg, for its name has been changed to "Petrograd."

How can the "entente cordiale" be established? Many chemists and pharmacists who have been active workers in national and international science will have lost their lives in defense of their countries, but the hope is expressed that those who have been spared will be imbued with more zeal and that they will hasten to restore their fallen fortunes and recover as rapidly as possible from disastrous conditions, and that chemical and pharamceutical activities will be resumed and fully restored. Surely this must be the hope of American pharmacists!

It will be recalled that the International Congress of Applied Chemistry ap-

pointed a commission to organize a movement to establish international standards for drugs and chemical substances with the object of establishing uniformity throughout the world by legalizing standards which will be operative in every country. It cannot be expected that these standards can be established immediately even in times of peace, and, although a start has been made, the onset of the war has prevented effective work from being undertaken.

A resolution (tenth) which was approved by the Congress is as follows:

"(a) That Section VIIIb of the Eighth International Congress of Applied Chemistry consider the feasibility of International Standards of strength, purity, method of testing and nomenclature of pharmacopœial preparations.

"(b) Section VIIIb (Pharmaceutical Chemistry) of the Eighth International Congress of Applied Chemistry having received and discussed the report of the International Commission on 'Variation in the Activity of Toxic Drugs,' resolves that it is desirable that this inquiry be continued and that the International Commission be reformed and to consist of the following eight members:

"Austria, Prof. Wilhelm Mitlacher; France, Prof. E. Bourquelot; Germany, Prof. H. Thoms; Great Britain, Francis Ransom; Netherlands, Prof. L. Van Itallie; Russia, W. Ferrein, Mag. Th.; Switzerland, Prof. A. Tschirch; United States, Dr. R. H. True, and the following three secretaries: G. P. Forrester, F. C. S., European continent; Peter MacEwan, F. C. S., Great Britain; Otto Raubenheimer, United States.

"(c) It is further resolved that this commission be authorized to enlist the co-operation of other persons actively interested in promulgating international uniformity of standards for potent drugs and improvement in their cultivation and collection.

"(d) That the International Commission of Congresses of Applied Chemistry be requested to approve the organization of an international committee under Joseph P. Remington, and composed of chemical experts approved by this commission, whose duty shall be to collect information from every available source on chemical products and the essential oils used in pharmacy, and to investigate the tests now in use to prove the identity and purity of said products and oils; also to consider standards and tests with the view of establishing uniformity in the same throughout the world, and to report at the Ninth International Congress the results of its work."

In addition to this, the Eleventh International Congress of Pharmacy, in September, 1913, at The Hague, appointed a commission to continue the work towards the unification of the pharmacopœias of the world. This commission has a wide scope, but it will be observed that the objects and principles are the same as those of the commission of the Congress of Applied Chemistry. Medicines are not supposed to differ greatly in the therapeutic action upon men, women, and children, irrespective of their nationality, and many advantages at once appear if this great work can ever be accomplished.

When the war is over, commercial relations between the various countries will be vastly stimulated. Every nation will seek to repair the tremendous losses which have been incurred. International travel will be resumed on a large scale and it is believed that international standards will be sought. It is not likely that an international pharmacopœia will ever be published, but there seems to be no good reason why these two commissions working together cannot formulate standards for the more important potent remedies to the end that there should be little or no variation in the standards of strength throughout the world. While the work is temporarily halted by present conditions, the objects are so worthy that every effort should be made to bring about a consummation.

TWILIGHT SLEEP.*

PROF. C. W. EDMUNDS.

During the past year there has been a great deal of interest aroused in the popular mind in regard to the use of certain drugs to lessen the pains of childbirth by the production of the condition known in this country as "Twilight Sleep." It would seem from the sudden interest taken in the subject that the method was a development of only the past few months, but, as a matter of fact, the use of nonvolatile drugs in labor dates back several years, to 1902, and is preceded by their use in general surgical work.

It was in 1900 that Schneiderlin, desiring to reduce the amount of chloroform which it would be necessary to give for an operation for cancer, preceded the administration of the chloroform by an injection of morphine and scopolamine. The results were so satisfactory that later on he increased the amount of these drugs, dispensing with the chloroform entirely. The doses used were quite large, even up to 1 1/6 grains of morphine and 1/25 grain of scopolamine in 1¼ hours, and he advised that in case of hurry a dose of morphine ½ grain and scopolamine 1/60 grain be given. He published his results in ten cases, and recommended the method highly as he considered it perfectly safe.

Two years later Blos published the results he had obtained in 105 cases, in which series there had been one death. Following these papers, the method was extensively used in general surgical work, but as statistics showing its dangers were gradually gathered, the method quite rapidly fell into disuse.

It was in 1902 that Von Steinbüchel suggested its use in obstetrics, and in his second paper he gave the details of its use in twenty cases. He used doses of 1/6 grain morphine and 1/200 grain scopolamine, which doses he said might be repeated if necessary. In contrast to Schneiderlin, the papers of Von Steinbüchel were very cautious in their tone. In the next few years the use of these two drugs in obstetrics was tested in many of the European clinics, and after a more or less extensive trial the method was given up in practically all of them. In Freiberg, however, the procedure was still used and further developed until the Freiberg method or some slight modification of it has come to be the one most generally recognized in this country.

One of the drugs which has been used is Scopolamine (which has also been named Hyoscine), an alkaloid found in Scopolia atropoides, Hyocyamus niger and other plants of the Solanaceæ. It is optically active, rotating polarized light to the left. Straub's scopolamine contains mannite in order to prevent deterioration. The other drug used is morphine or some substitute which has been introduced for it. In some clinics pantopon, a mixture of all the opium alkaloids introduced by Sahli, has been tried, but it has not given much satisfaction as it has been found to be too toxic.

More recently Narcophen has been introduced and it is being extensively used. This drug is a mixture of the meconate of morphine together with the meconate

*Read before Detroit Branch, A. Ph. A., March 19, 1915.

of another of the opium alkaloids, narcotine. About one-third of the weight of Narcophen is morphine. This preparation is the one now being used in the Freiburg clinic.

Briefly stated, the method is as follows: The first injection of narcophen ½ grain and scopolamine 1/150 grain is given as soon as labor is well established as shown by the fact that the uterus is contracting for about thirty seconds every four or five minutes. Three quarters of an hour after the first injection, a second is given, this time of scopolamine alone—1/150 grain. The further dosage varies for each patient and is determined by repeated memory tests. This test is carried out half an hour after the second dose by showing the patient some object, or by asking the patient, for instance, how many injections she has had, or some such question, and making note of her answer. Her memory is tested twice again in like manner by showing the same object or asking the same question at intervals of half an hour; and if after the second test the memory is still retained, a third injection of scopolamine 1/200 grain is given. Further injections of scopolamine are given as necessary in order to maintain the desired end, which is the abolition of memory. The pains are perceived by the patient, at the time, but upon awakening afterwards she has no recollection of them. It is also true that in a very considerable percentage of cases there is a very distinct lessening of the pain itself.

As to the advantages of the method, it may be said that in about seventy percent of all cases there is not only loss of memory of the pain of labor but also relief from the suffering. In about ten or twenty percent more there is no loss of memory but only some relief from the pain, and in the rest of the cases the method is a failure.

In regard to the disadvantages, one of the first which may be mentioned is the complex technic necessary. It is practicable to carry it out only in a hospital, as constant attendance and absolute quiet are essentials. If it is to be done in a private home, it means the transporting of physician and one or two nurses to the house for the entire time of labor. The patient must be watched very carefully, and the child requires constant attention as its heart rate must be counted every fifteen minutes in order that labor may be terminated quickly by operative measures in case the child is discovered to be in danger.

The second stage of labor is apparently prolonged, causing increased danger to the child and making it necessary to use forceps more frequently. And finally as to the danger to the child, there seems to be no doubt but that more frequently than normal it is hard to get the child to start breathing. This applies not only to cases of true asphyxia but also to the condition known as oligopnea in which the respiratory movements are much interfered with for some little time after birth, due to the depressing action of the two drugs.

Many reports are being published which are very favorable to the method, but it is also true that there are in addition reports of the deaths of a number of infants for which no other explanation could be given, than that the drugs used in the production of the twilight sleep were responsible for them.

To summarize, it may be said that it is probably true that the condition of Twilight Sleep is in no way harmful to the mother, but that it is believed today that it involves some increased risk to the child.

AMPULS.

THESIS PRESENTED BY HERMAN H. NORTH, PH. G., DEPARTMENT OF PHARMACY, COLLEGE OF JERSEY CITY.

THE EVOLUTION OF THE WORD "AMPUL OR AMPOULE."

The newer Pharmacopœias have been practically enforced to give ampuls a place by the always evident Pharmacopœia elegans, inasmuch as ampuls have lately come into extensive use.

The etymological origin of the word "ampul" in English, or "ampoule" in French, is not absolutely clear. There are two possibilities. It may have been derived from a diminutive of a Greek word "amphora," or from a lost Latin word "ambolla," compounded from "amb-olla." But the Latin and Greek languages are offsprings of an older mother language, supposedly the Indo-Germanian language. If we trace either "amphora" or "ambolla" to their original shape in the presumed Indo-Germanian language, we will find the same ideas prevalent. "Amphi" in Greek and "ambo" in Latin, mean the same and lead to the idea of a vessel having a handle on each side.

In German the development of the word "Zuber" is the same. "Eimer," from "ein-ber," meaning one handle, and "zuber," from "zwei-ber," meaning two handles, designate different vessels bearing one handle, or others bearing two handles. It is clear that originally the vessels called "amphora," needing two handles, must have been very large, and indeed they were.

We find such vessels corresponding to the denominations "amphora," in old Egyptian pictures, in excavations of Schliemann of Troy, and in some pictures and excavations of old Greece and Rome.

In some instances, this "amphora" had a standard capacity. In olden Greek times, this "amphora" had a capacity between eight and a half and nine gallons. In the later time of the Roman Empire this capacity was decreased to only six gallons.

Besides these enormous vessels, there were also small oil containers used for illuminating purposes, having chains attached to them on both sides, as parts of candelabra. These small oil lamps had two handles attached for the bearing of chains or strings, and were also called "ampulla," and therefrom originated the small hanging lamps called "ampels," which are still used in Germany, Holland, Sweden and Norway.

This word "ampul" was known two thousand years ago, as a rare word in the old Latin language, and it became more frequently used in mediæval Latin of the Catholic Church and in Medicine.

Large vessels gradually assumed a special shape. The possibility of these vessels carrying large amounts of a liquid led to a belly-shaped vessel. The possibilities of contamination by contact with the air, evaporation or spoiling while pouring out the liquid from large orifices of these belly-shaped vessels led to the construction or rather the formation of vessels having narrow necks.

Henceforth, a large vessel, flask-shaped or belly-shaped, having a long thin neck, with no handles, was the only remaining form prevalent and all other forms

and shapes were forgotten. The first perception can be traced back two thousand years ago, whence the adjective "ampullaceus," and not "ampulla," applied or rather designated a vessel as above described.

Plinius used this adjective "ampullaceus" to designate a pear which was belly- or flask-shaped, having a thick or rather broad belly and a long thin neck. During mediæval times the pilgrims to the Holy Land used to carry water contained in flasks made from pumpkins, having the above described shape. The older shape, namely, having two handles attached to the "ampul," was lost in mediæval times for the word "ampulla" itself.

From now on, the ampul assumed the shape of a container having a large belly and a small neck, which was made from different kinds of colored glass and even earthenware and leather, and later on of pumpkin skin.

In the Latin of the Catholic Church, we find small "ampulla" holding holy oils or blood of martyrs. In Canterbury and Rheims there were "ampuls" containing holy oil used for crowning the Kings of England and France.

In the Roman Church, they have "ampuls" containing wine and water for use in mass, and others containing oils were used for different sacraments.

In Scientific Botany and Biology the word "ampulla" is often used, which in Morphology designates flask shaped cavities.

In French "ampoulette," Dutch and Swedish "ampulette," refers to a vessel which does not have handles on both sides. It refers or rather designates a vessel, bulbed or rather bellyed at each end and connected by a long thin neck, through which ran sand at certain time intervals, as for example, a quarter of an hour or half an hour, and which was called an hour-glass. The sand was placed in one end of the vessel and as it ran through the neck into the other vessel, it would thereby designate the time. When all the sand ran into one vessel, it was then inverted and in this way they used to differentiate the hour, or rather the time of the day.

In modern times the word is still used in some Romanic languages; but in these languages the word has partly a "u" and partly an "o" as the original "amphora" or "ambolla."

"Ampulla," or the respective derivative word of these modern languages, means a flask, bottle, jar, pot or other vessel swelling in the middle and furnished with two handles.

The latest development was to use the word "ampoule," originating in France, designating some kind of little flasks of glass with long necks and closed or rather sealed by the gas flame and enclosing volatile liquids for chemical purposes. From these ampoules the pharmaceutical "ampoules" have been derived. In English and German this word is generally written "ampul."

DISCUSSION

Among the noteworthy advancements in the preparation of medicinal agents, the ampul has attained a very useful position. It has made it possible to administer with celerity, accurate amounts of sterile solutions, of definite strength and known therapeutic value. These solutions are injected subcutaneously, intramuscularly or intravenously, but rarely by other methods of administration, as for example, ethyl chloride. The field of administration of such injections

has greatly increased because they are rapidly absorbed, while certain of them are delivered directly into the circulation. Therefore much loss of time and imperfect absorption of the medicinal agent and waste is avoided. Furthermore, gastric intolerance to certain drugs or serious tax upon the digestive organs may be mostly eliminated. Convenience and safety are the keynotes of ampul therapy, while quickness and directness of action are features deserving scarcely less emphasis. To date, no container has proven as practical as the ampul, which for evident reasons has become immensely popular with physicians.

HISTORY OF MEDICINAL AMPULS.

G. Pegurier says that the first ampuls were Pasteur's pipette and the sterile flask, which were suggested in the course of his researches on bacteria by a desire to obtain pure cultures by using an absolutely sterile medium and to preserve these cultures from accidental contamination by extraneous organisms.

It was about thirty years ago, that Limousin, a French pharmacist, proposed the ampul as a convenient method of preserving hypodermic solutions, while a paper describing ampuls was published in the "Bulletin Generale" of the "Societe de Therapeutique" for April, 1886.

In foreign countries, especially in France, this method of dispensing has attained its greatest popularity. In 1905 in a great many Russian pharmacies, ampules were filled by use of the hypodermic syringe or by heating and dispensed on prescriptions.

The French have made a very general use of this form of medication which is as popular in the Latin countries of Europe as the hypodermic tablet is in the United States. In time the hypodermic tablet will give way in popularity to the ampul for general use in the United States. As a matter of fact the principal danger of infection in the use of ordinary hypodermic injections comes not from the solution but from the syringe of the physician, who does not use sufficient care in sterilizing it before putting it into use.

FORMS OF AMPULS.

The largest ampuls on the market are the ethyl chloride ampuls. Ampuls vary greatly in capacity; large ampuls being used for massive injections of saline solutions. The form varies as widely as the capacity. The original form proposed by Limousin consisted of a round bulb with a neck drawn out to a small tube, therefore the name ampul, as explained in my introductory chapter. The dropper ampul has been introduced by many large manufacturers for dispensing chloroform. The tubes of concentrated spirit of nitrous ether and those of ethyl-chloride are also put up in ampul form which were originated by Bengué. A special form of ampul which can be used as a hypodermic syringe called the "Omnium Ampoule," is of French origin and is now also made by American manufacturers.

MANUFACTURING OF AMPULS.

Glass Required for Ampuls.

Tending to cover such a wide scope of uses, the ready ampuls must be fit for all kinds of fillings. The best glass that can be used for such ampuls is a neutral glass, that known as Jena Normal 16 III or that termed Fiolax glass, white or

amber, as ordinary glass contains soluble alkali, which affects the solutions therein contained. For example, ordinary glass will precipitate crystals of strychnine which may be small enough to pass through a hypodermic needle and cause great pain when injected into the tissues. For solutions which are changed by the action of the light, as ferric solutions, apomorphine or physostigmine solutions, ampuls of amber glass should be employed.

GLASS TESTS.

A good method to try out the glass is to fill the ampuls with a one percent alcoholic solution of phenolphthalein and boil them for about half an hour. If the solution yields a pinkish color, then the ampuls should be rejected.

In order to test for the presence of the soluble modification of silicic acid, place some of the ampuls in one hundred cubic centimeters of tenth normal potassium hydroxide solution and boil for one hour. Then concentrate it down to ten cubic centimeters. Then let it stand for twenty-four hours and if a turbid precipitate of silicic acid is formd, the ampuls should be rejected on account of the presence of free soluble silicic acid.

The Swiss Pharmacopœia directs that the empty ampuls should be rinsed with dilute hydrochloric acid, followed by distilled water with the idea of neutralizing excess of alkali.

If the ampuls are cleaned one day with hydrochloric acid, they should be washed well and cleaned for twenty-four hours with an alkali or better still, inverted, clean first with alkali and the second day with acid.

THE MAKING OF THE EMPTY AMPULS.

The manufacture of empty ampuls has developed into a special business both in Paris and in Thuringia, Germany. Among the leading manufacturers of the empty ampuls are Adrain and Fournier of Paris, and Fridolin Grenier of Neuhaus am Rennweg, near Jena, Germany. Where the dispenser is unable to purchase the ready-made ampuls, he can make them himself, from Jena glass tubing, if only ordinarily skillful in glass blowing.

With a little care, it is very easy to make ampuls for your own special use. Take a small Jena glass tube about half an inch in diameter. Close it at one end by heating it in a blast or an ordinary bunsen flame. Heat it again, this time further up, until it becomes soft and with a gentle pull and twist, an ampul can be made, which is as good as that made by any manufacturer.

By blowing a current of air into the side of the heated ampul, a spout is formed which is very useful for keeping and pouring out liquids. Such ampuls can be used for keeping chloroform, ergot, digitalis and strophanthus solutions. From the above, we can see that there is really no excuse for anybody saying that ampuls cannot be made because the empty ampuls are hard to obtain. With just a little tact and manipulation, one can make hundreds of ampuls within a short time.

CLEANING THE EMPTY AMPULS.

Place the empty ampuls into a suitable vessel of distilled water, bring to a boil, remove the flame and pour cold distilled water on the ampuls as they float in the boiling water. They at once fill themselves. Again bring to a boil, when all or nearly all the water will again be expelled. Then sterilize in an oven at 120° C.

METHODS OF FILLING AMPULS.

The methods of filling ampuls may be divided into three classes:

1. By Gravity. 2. By Pressure. 3. By Vacuum.

Under each of the above headings, a description of the working of one instrument will be given in full, which will in all probability apply to all instruments, although differently constructed, yet working upon the same principles.

Every ampul to be filled must have a larger capacity than the contents therein to be placed. This is on account of sealing, because it is absolutely impossible to seal the neck of the ampul in the flame if the point and surrounding neighborhood is not absolutely dry, because wet glass in the flame cracks.

BY GRAVITY.

A very simple form of gravity filler and one easily understood is a burette. As the burette is accurately graduated, it makes it very easy to measure the amount of solution put into each ampul. As the opening of the burette is quite large, compared to that of the ampul, all that is necessary to do, is either to close the opening of the burette a little by the aid of heat or else attach a piece of rubber tubing to it, having attached at one end a small glass tube.

All that is necessary to do, is to pour the sterilized solution into the burette and cover the top of it, so as to prevent any contamination of the solution. Then by placing the ampuls on a rack or holding them in the hand, the solution can be easily poured into them to the desired amount, sealed and then sterilized.

The only possible objection to this method may be the fear of contamination of the solution, but this seems to be rather untrue. If the filling of the ampuls as above described, is performed in a room where no current of air is circulating, contamination is almost improbable. In one of the universities, twenty-four hour, gelatin cultures of the air of a room were taken, and it was found to be perfectly free from any bacteria, so that the above method of filling ampuls can be carried on with absolute certainty that the ampuls will be bacteria free.

The commercial filling of ampuls should be carried on in places remote from large cities because there is less danger of contamination by germs.

A kind of multiple burette is used by Paillard-Ducatte of Paris, under the name of "Semplissodosseur." There are other modifications of the burette which are used and employ the same principles. For example, the Pegurier and the Falck stock bottles which involve more or less the same principles of gravity filling and therefore employ and work by the same method as that of the simple burette and therefore require no further explanation.

In the same way since about two decades (1896-7) Professor Alexander von Poehl of St. Petersburg filled his spermin ampuls with 1.7 cc. of a solution, which contained physiological salts in the same proportion as those found in the blood.

PRESSURE FILLER.

The hypodermic syringe furnishes a convenient and simple form for filling ampuls. An all-glass syringe should be used for filling ampuls by this method. A syringe of this kind allows perfect asepsis and accurate dosage. All that is necessary to do, is to sterilize the syringe by boiling it in distilled water. All parts of the syringe can be taken apart, so that complete sterilization of the

syringe is possible. The syringe is then filled with the solution and gradually poured into the ampuls, filling them with any quantity of the solution desired. The ampuls are sealed in the bunsen flame and then sterilized.

In the Journal of the American Pharmaceutical Association, May, 1914, Mr. H. A. B. Dunning, of Baltimore, said that a very simple process in use, in his establishment for making camphorated oil ampuls, was to simply fill the ampul by using the hypodermic syringe, seal the ampuls and sterilize them.

The only possible objection to this method may be that the air in the ordinary dispensing room would be contaminated. This can be overcome by the manufacture of an aseptic hood, consisting of an air-tight box provided with a glass window in the top and a glass side through which light may be admitted, the front containing two arm holes through which the hands of the operator may be thrust. A bunsen burner can be also placed in the hood with a suitable outlet for the gases and in this way the process of filling and sealing can be carried on aseptically.

FILLING BY MEANS OF A VACUUM.

The best method for filling ampuls is that in which the use of a vacuum is involved. A rather ingenious method of filling ampuls by vacuum has been tried by Dr. J. Leon Lascoff and found advantageous.

This apparatus has been fully described in a paper on "Camphorated Oils in Ampules," in the Journal A. Ph. A., Vol. 3, 1914, p. 689, in a paper which was presented by the chairman of the section on practical pharmacy and dispensing at the Nashville meeting of the A. Ph. A.

This is a very simple method and can be operated by almost anybody. The principle involved is that by removing the atmospheric pressure of fifteen pounds to the square inch, the liquid will rise in the ampuls to the height of the air pressure plus the pressure exerted by the weight of the solution.

The quantity of liquid that the ampuls contained has been measured and each ampul has been found to contain exactly 2 cc., which in the case of a bichloride of mercury solution, represented seven and a half grains of bichloride of mercury.

Camphorated oil ampuls have been filled in the same manner.

There are many other devices used by different people which work practically under the same principles involved above and therefore need but mentioning of the makes. An apparatus used by Fairchild Bros. & Foster, also the Eury apparatus described by Pegurier and the apparatus described by Spindler in the Pharmazeutische Zeitung for 1908, made by Auer, of Zurich, all work by vacuum and work by principles similar to that described above.

The above described apparatus is probably the most convenient and satisfactory method of filling ampuls, also inexpensive to construct and easy to sterilize and can be used not only on a small scale, but also on a large scale, for by adding more glass containers you can increase the filling so much more. Its use is well within the limits of any enterprising pharmacist.

TO TEST THE SEALING.

In sealing the point of the ampul, it is not always easy to make sure that the sealing is perfect. This can be readily tested by boiling the filled ampuls in a solution of methylene blue, one grain to two ounces of water, and allowing the

ampuls to remain there until the solution cools. In case the tubes are imperfectly sealed, the color will show in the contents of the ampuls, after having cooled in the solution.

STERILIZATION.

The importance of complete sterilization of ampuls and their contents cannot be too strongly accentuated. Its extreme importance can be seen from the coming Ninth Revision of the United States Pharmacopœia and the Fourth Revision of the National Formulary, which contain a chapter on sterilization and from which the following matter has been in part taken. Much care must be exercised at every stage of the operation of making solutions and filling them to insure complete sterility. The utensils, the solvents and the substances used must be sterilized and protected from contamination.

The term "Sterilization," as employed in the practice of medicine and pharmacy means the destruction or removal of bacteria or their spores and other living organisms. This may be accomplished in various ways, depending upon the nature of the object to be sterilized. A sterile condition can be maintained only as long as the substance or object is kept from contact with air or other media which may carry micro-organisms.

These organisms may be pathological. In this case, it would be very harmful if a solution of this nature would be injected into a sick person. It would undoubtedly create a new sickness but a danger of this kind is not very great compared to a second danger, in that the germs which are not pathological at all, are constantly splitting and changing the dissolved organic compounds contained in the solution. In this case, it is very much more important that the ampuls be sterile, more so than the injecting syringe because the contained liquid remains months and years in contact with the ampuls, whereas it only remains a few minutes in contact with the injecting syringe.

GLASS UTENSILS.

These may be sterilized by heating them from 160° to 170° C. for two hours in a hot-air sterilizing oven or in a closed vessel (autoclave) under steam pressure at a temperature of from 115° to 120° C. for fifteen minutes. Heating in a current of steam for thirty minutes, or thoroughly boiling for fifteen minutes in water or an aqueous solution of sodium bicarbonate (1-1000) will kill all non-spore-bearing organisms and some spore-bearing organisms. As the presence of even a minute quantity of alkali is frequently objectionable in glass containers, the process of sterilization should in such instances be preceded by a thorough cleansing of the bottle, ampul or other receptacle with one percent hydrochloric acid, followed by a thorough rinsing with distilled water.

It is also possible to sterilize with an alkali solution but must be followed by a new cleaning with an acid solution.

MEDICINAL SOLUTIONS OF SUBSTANCES NOT READILY DECOMPOSED BY HEAT.

Solutions which are not injured by high temperature should be sterilized in a current of steam or in an oven in a closed apparatus (autoclave) by steam under pressure.

Sterilization in a current of steam should not be concluded in less than thirty minutes and the heat should preferably be continued for one hour. An exposure

of from fifteen to twenty minutes is sufficient if the sterilization is carried out in a pressure apparatus at a temperature of from 115° to 120° C.

MEDICINAL SOLUTIONS OF SUBSTANCES READILY DECOMPOSED BY HEAT.

With substances affected by heat there is danger of decomposition at high temperatures and Tyndallization or intermittent sterilization must be resorted to. In these cases the ampuls should be heated to 60° C. for half an hour at intervals of twenty-four hours for three or four consecutive days.

SUBSTANCES DECOMPOSED BY HEAT.

Hager's Handbuch der Pharmazeutischen Praxis, states that solutions of the following substances are liable to decomposition at the boiling-point of water: Atropine, cocaine, hyoscine, scopolamine, duboisine, physostigmine, atoxyl and ergot solutions. Acid hydrochloride of quinine and urea is also liable to be decomposed.

From the statements of other scientists, chemically pure products of these alkaloids and other compounds can stand a very much higher temperature than 100° C. without any decomposition. It is not the object of my thesis to decide these contradictory statements.

It is not to be wondered that some of these questions relative to ampuls are undecided, as ampuls have only been lately introduced and therefore more special research work is needed.

ADVANTAGES OF AMPULS.

The fluid preparations of ergot, digitalis and strophanthus deteriorate more or less rapidly under ordinary conditions. The principal causes of such deterioration are oxygen of the air and heat, therefore recently manufacturers have taken advantage of ampuls and are putting up preparations of the above substances in ampul form. It is a known fact that fluidextract of ergot retains its activity for a much longer period of time when kept in well-filled and tightly-stoppered containers, which precautions can be had through the use of ampuls.

Ampuls are always ready for immediate use. It is no longer necessary, as in making up solutions from powder or tablet, to wait until the water can be sterilized and cooled. The solution is accurately adjusted to contain a specific amount of medicament in each cubic centimeter, thus insuring accuracy of dose.

The solution is asepticised by heat or by filtration through porcelain, as its nature demands. The drug is treated with the most suitable solvent, whether that be olive oil, distilled water, or physiological salt solution.

Permanence is attained by means of the hermetically sealed container which protects the contents from bacterial contamination and from oxidation, while actinic effect of light is prevented by the use of amber ampuls and by enclosing the glass ampuls in an impervious cardboard carton.

In hospitals, the preparation and preservation of solutions is a matter of little difficulty but to the busy general practitioner it is a source of annoyance and inconvenience and to say the least, is in many cases decidedly unsatisfactory; hence, the advantage of using ampuls.

Especially during war time, a great deal of ready medicine must be at hand, both on the battlefield and in the hospitals. It is true that many tablets and

powders are always ready at hand, but how much more convenient and time-saving would the ready ampul be.

It is absolutely necessary that only distilled water be used, as ordinary tap water, on account of the presence of bacteria and foreign matter, is objectionable. Few physicians have distilled water constantly on hand in their offices, and especially in time of war, the possibility of securing distilled water in a non-contaminated room, on the battlefield, is hopeless and to procure the necessary amount from the usual sources of supply, at times of peace and more so during times of war, is time-consuming and otherwise inconvenient, hence the advantage of using prepared ampuls.

It is manifestly all important that solutions for hypodermic injection should be sterile. It is likewise evident that physicians are very frequently unable to prepare sterile solutions extemporaneously, especially on the battlefield during times of war and therefore by using ampuls, all of these difficulties can be overcome.

THE POSSIBILITIES INHERENT IN A COLLEGE OF PHARMACY FOR RENDERING THE MAXIMUM OF EFFICIENT SERVICE TO PHARMACY.*

FREDERICK J. WULLING.



I am to speak upon the future possibilities inherent in the St. Louis College of Pharmacy. The possibilities of this college are the same in kind, as those of any other. The fundamental purpose of any high-grade college is, or should be, to render the maximum of efficient service to the calling and through the latter to the public. To render the most efficient services a college must meet many requirements and must conform to some quite definite standards. Some thoughts that have come to my mind in the matter I have formulated into an outline which I submit herewith and which I will use as the basis of some remarks:

Composition of the college.—1. Governing body, 2. faculty, 3. quarters, 4. equipment, 5. students, 6. alumni. All of these are organized to render the maximum of efficient service to (a) the student body, (b) the profession, and through these to (c) the public.

Under the heading of governing body comes the consideration of business administration, which includes executive faculty officers; budget; clerical assistance; card indices; statistics; co-operation with faculty; appointments; salaries and salary scale; faculty promotion; research; fellowships; scholarships; publications; future development and extension work.

Under the heading of faculty comes the consideration of organization, which includes executive faculty; executive officers; classification of teachers into dean, professors, assistant professors, instructors and assistants; conferences; aca-

* An address delivered at the fiftieth anniversary of the St. Louis College of Pharmacy.

demic freedom; sabbatical year; administration of educational matter; relation to governing body; relation to students; ratio of teachers to number of students; relations with other faculties; co-operation; promotion; salaries; research; fellowships; scholarships and extension work.

Quarters should be well-located; abundantly lighted, naturally and artificially; spacious; modern; sanitary; fireproof; well-adapted, and preferably a separate building.

Equipment should be, sufficient in quantity; adequate in kind and variety; up to date; extensively used; systematically kept, and inventoried.

Under the heading of students comes a consideration of the kind to attract; entrance standards; courses of study both undergraduate and graduate; rating of work in "credit hours"; conduct and discipline; honor system; employment while at college; organization; health conditions; moral standards; graduation standards; and degrees.

The alumni owe it to the college to keep in touch with it; send qualified students; advise in conduct of college; and uphold college ideals by precept and practice.

GOVERNING BODY

I will consider the first two divisions, governing body and faculty together.

Any college of pharmacy to be successful in the rendition of a maximum of efficient service must have a general aim and ideal, and a policy and a suitable and well-constituted organization to carry them out. This organization must include the governing body and the faculty. The respective functions of these two divisions within the organization should be designated, by conference and agreement, as clearly and definitely as possible, although in many respects the line can not be drawn very closely. In a general way, the governing body (the regents of universities and the dean, or the trustees of other educational bodies or associations and the dean) is usually and logically the dominating division, and has in charge the financial administration and, with the aid of the faculty, determines both the business and the educational policy of the institution. In the case of weak institutions the cause of the weakness can usually be found in the governing body, which, through indifference or incompetence or failure to fully recognize its duties and responsibilities on the one hand, or through unfavorable or uncontrollable conditions on the other, is unable to provide and maintain adequate quarters and equipment and a competent faculty for the fullest exercise of the purpose for which an educational institution is supposed to be created. In some few cases it appears that the governing body and the faculty are made up in whole or part of the same persons.

The second division of the organization is made up of the faculty. Where there is a weak governing body the weakness usually extends into the faculty and into all other divisions, while correspondingly a strong and well-qualified governing body establishes and infuses strength into all divisions. In some cases a strong faculty or a strong executive officer of the faculty succeeds through affirmative influence upon the governing body, in developing the college into a tolerably efficient working unit. These cases are not so rare as would generally be supposed. Indeed, in numerous cases, it is a single individual, usually clothed with some authority,

who sets the pace and formulates the ideals to be reached, and by patient endeavor and hard work corrects or overcomes the weakness or indifference of the governing body. A strong governing body will concern itself with the establishment of a sound financial basis for all divisions, resting upon a sufficient and equitably distributed budget to provide and maintain a representative faculty, adequate quarters and a well-selected and balanced equipment. An organization thus composed should divide the responsibilities of its functions into (a) a business administration, and (b) an educational administration; the governing body assuming the former and the faculty the latter.

BUSINESS ADMINISTRATION

The business administration, of course, is relatively important in that it must provide the funds for the conduct of the institution, and because the nature of the conduct depends upon the quantity of finances. There are practically only two classes of pharmaceutical teaching institutions in this country, and their division is based largely upon the sources of their finances. These sources are, on the one hand, primarily the student-bodies; on the other hand, the student-bodies and the States. In the former case there is often required a very careful and economical business administration, and because of the insistence of some of the teaching departments, as over against the claims of others the division of the finances is not always equitable unless the practice is followed of considering the needs of each department in the light of the needs of all departments and crystallizing the agreements into the form of annual or biennial budgets. In this part of the administrative work the faculty should render much assistance. Indeed, the organization should provide that the dean and the heads of faculty departments agree upon the distribution of the sums available for the educational administration and then submit their recommendations to the governing body.

Aside from the administration of the financial affairs, the business administration should provide for a sufficient clerical force, whose duty among others it should be to keep a complete set of books and from which should be compiled annually much information in the nature of statistics, which should be card-indexed for ready reference. This business record should include information as to receipts and disbursements, as to moneys paid for salaries, for supplies and for office staff, an index of the supplies, including their cost, etc., acquired annually under the respective budget divisions, etc. There are firms who make it a business to systematize other businesses. They do this often at a very low price, and money thus expended usually bears much fruit.

EDUCATIONAL ADMINISTRATION

Next in importance to or possibly co-equal in importance with or even superior to the business administration is the educational administration. This educational administration should be vested exclusively in the faculty, the latter, of course, subject to the governing body. A representative faculty is one composed of members who possess a high degree of attainment not only in their chosen fields of work, but also in the more academic fields of scholarship and in culture. It is imperative that they possess as the first essential pronounced abilities to teach. They should have a special pedagogical training and should be versed in

psychology and logic and philosophy. They should have a pronounced love for their work and should carry it on with enthusiasm and be able to communicate their enthusiasm to their students. They should be men of representative personality and of some affairs, and should be able to measure themselves satisfactorily with the successful teachers in other professional callings. The men in the higher ranks should possess not only the ability, but should also have the necessary incentive and time to carry on research work. The academic freedom which has so greatly contributed to the development of educational institutions in this and other countries should be enjoyed more fully by members of pharmaceutical faculties. They should also enjoy the advantages of the sabbatical year. It would redound greatly to the benefit of the college if it were an established rule that the men in any of the professional ranks be given the opportunity of a year's work and study in a foreign country, or even in some of the higher institutions of our own country at intervals of seven years. Where the sabbatical year is recognized the professor is usually away on leave of absence for either a full year at half salary or a half year at full salary.

THE FACULTY

The faculty should be composed of an executive faculty, accountable to the general faculty; an executive officer, who usually is and should be the dean; professors, associate professors, assistant professors, instructors, and assistants. The faculty should formulate all educational policies as well as establish the courses of study, the entrance and graduation requirements, the method of interpreting the work of students in credit units, the rules for the conduct and discipline of the students—in short, should administer upon all the educational activities of the college and be responsible only to the governing body. All faculty actions should be final only after approval by the governing body unless the latter has given the faculty power to act in either a general or special field.

CO-OPERATION OF FACULTY AND GOVERNING BODY

The governing body and the faculty should co-operate in the selection and appointment and in the promotion of faculty members, always with the fact in mind that it usually is not an easy task to find the right man at the low salaries offered, and that on this account great care in the selection of permanent additions to faculties should be exercised, lest insufficiently competent men lower the faculty standard. It would be a good plan to more universally adopt the practice of some colleges of appointing instructors from year to year and assistant professors and associate professors for periods of three years. This arangement relieves both parties of embarrassment and the obligations are understood on both sides. Appointments of full professors are usually for an indefinite period, the unexpressed understanding being that the teacher who has reached the full professorial estate has also acquired the qualification to continue his work satisfactorily.

Many governing bodies have erred greatly in the past by bestowing academic titles on teachers wholly unqualified for such distinction. Indeed, there are numerous cases in which, instead of any salary or a sufficient salary, services were rewarded by titles which were often but not usually deserved. In this way pharmacy has been greatly abused, especially the title of professor.

The two divisions should further co-operate in establishing fellowships to foster research and in creating other opportunities for research; in providing scholarships for worthy and capable students; in promoting a continuous and developmental growth, including possibly extension work, and in other matters, such as a proper ratio of teachers to students; faculty salary scales; social work among students, including a study of their health conditions, environment, associations, entertainments, moral and social standards and suggestions for the improvement of these; rules of student conduct and discipline; student publications; honor system; relation of the college to other colleges and to organizations; college publications; maintaining the interest of the alumni in the college and securing their help and advice in the conduct of the college, etc.

The faculty should have frequent conferences, in which the members should harmonize and co-ordinate the work of the curriculum, each with the full and intimate knowledge of every other members' work and responsibility, to the end that each can give the fullest measure of effective service to the students and to the college. The work of a faculty is distinctly inferior where each member carries on his work independently and without regard to the work of the other members except in a very general way. It is the duty of the dean to see that the divisions and units or departments of a college co-operate and co-ordinate in all respects, even in the less important details, and that every member of the faculty is concerned at least as much in the welfare and success of the college as a whole as those of his own particular department. Over-development of some departments as against others should be avoided because it disturbs that balance in the nature and conduct of work which should characterize the efficient and high grade college. I do not hesitate to say that in the average faculty there is not enough co-operation and coherency to insure a maximum of efficient service.

For the most effective service the faculty should be a separate organization and should work as a unit. To facilitate its administration work, much of the work should be apportioned to appropriate committees; the heads of departments should constitute the executive faculty and the dean the administrative officer whose powers should be defined largely by the governing body. Individual effort and growth should be stimulated and recognized, especially in the lower ranks of the faculty. No two persons possess identical ability or capacity, but in the absence of special agreement the entire effort and ability of every full-time member, whatever it may be, quantitatively and qualitatively, should be contributed to the college. Every faculty member is doing his duty to the college if he contributes conscientiously the entire product of his activity, irrespective of quantity or quality (though these must, of course, measure up to a certain minimum), to the common cause and purpose of the college. Team work is the only kind of work faculties should do, and team work is the concerted work of a number centralized into one common purpose to produce that degree of efficient service which only earnest and willing working together will bring and which is the only kind of service any faculty should deem itself worthy of giving.

FACULTY AND STUDENTS

The faculty and the students should always co-operate to produce the best results for each. Much of the advice given to students is also applicable in a

degree to the faculty. The presumption is that the members of faculties always have in mind the fact that they also are students, but of a maturer growth, and in this light the faculty has duties to itself as well as to the student body.

The most important and far-reaching duty which the faculty owes extends, of course, to the student body. The students soon become the responsible practitioners. They carry with them the fullness or the paucity of ideas and ideals instilled into them during their student days; as the faculty so the students, in a large measure. While I would not belittle the importance of a well-rounded and conscientiously taught course of study, I yet would subordinate it to the imparting to students of high aims and lofty ideals in human conduct; to the students' development of a high sense of moral responsibility; to the creation within the students' hearts of an enduring love and enthusiasm and respect for their chosen calling; to the students' recognition that capacity for self-help and the continuous and capable exercise of that capacity and the effective use of specialized knowledge is far more necessary and resultful than the acquisition of much mere information subject to neglect and loss by the memory; to the students' conviction that the exercise of the reason, the use of sound and well-considered judgment, the practice of logic and the habits of order, sequence and accuracy are the essentials for personal and professional development, and that their opposites in an equal or even greater degree retard growth and usefulness and therefore impair quality of service. Students should be imbued with the fact that mere knowledge is of no inherent or intrinsic value if it is allowed to lie dormant and latent, but that its real value lies in its judicious use and application to purposeful ends, and that the capacity developed in its acquirement makes the students correspondingly competent to administer upon more and more difficult problems as they appear. Not only is the victory worth while, but the struggle is even more so. The faculty which believes in easy and lax methods and is indifferent in its graduation requirements and fails to advance very markedly the students' professional and personal ideals falls far short in the successful exercise of its duty and fails to recognize the very large opportunities for and the great privilege of rendering upward service which its place in the college gives it. In the ultimate the value of every individual to humanity is measured by the quality and quantity of service rendered, and, according to the law of cause and effect or the law of compensation, or whatever one may call that principle which balances things, capable and unselfish service weighs more heavily than any other factor. This matter of service is constantly impressed upon students by some faculties, and emphasis is laid upon the fact that any kind of training must include not only the possession of a sufficiently wide scope of knowledge and the ability to add to it and to employ it wisely and effectively, but also all those other virtues that mark and distinguish the cultured and refined and unselfish and devoted practitioner.

QUARTERS AND EQUIPMENT

Adequate quarters are a very real necessity for the conduct of the best kind of work. No matter how competent the worker, if he is not properly housed or quartered, he is unable to do his best. In general, quarters should be well located, abundantly lighted (naturally and artificially), consistently spacious, modern, sanitary, fireproof, well-adapted and preferably constitute a separate

building. The location determines in a large measure the usefulness of a college. Obviously, the college should be located in the largest center of population of a given geographical district, and the more convenient the location within this large civic center the better. If the quarters constitute a separate and well-planned and adapted building, the possibility of service is that much enhanced. In the planning of quarters, as a rule, not sufficient attention is given to the lighting problem. The quarters should be lighted naturally from all points of the compass and provisions should be made in the planning of the building for access of sufficient daylight. The quarters should be consistently spacious. Overcrowded and cramped quarters are not much better for efficient work than too spacious rooms, in which the traversing of large areas consumes much time and strength. It is obvious that the quarters should be modern, sanitary and fireproof. Good sanitary conditions are essential to good health and the safety of the occupants of the building requires that the latter be fireproof or that it have sufficient protection against fire. One of the most efficient protections against fire in buildings that are not fireproof is the sprinkler system. This is recognized by the fire underwriters, and buildings equipped wth this automatic sprinkler system are insured at a much lower premium than other risks.

Equipment is another of the essentials for producing the best results in the work of a college. Equipment should be sufficient in quantity and adequate in kind and variety. It should be up-to-date, be extensively used, systematically kept and carefully inventoried. Much could be said on the matter of equipment, but time and space forbid.

CONCLUSIONS

A college which meets the standard I have hastily and all too incompletely presented to you, is fitted to render a service to pharmacy and to the public that is correspondingly equal to the service now rendered by any college representative of other professions. If all colleges of pharmacy were of this standard, their combined influence would soon place pharmacy into its rightful rank of co-equality with other learned professions. The service which a highly developed profession of pharmacy can render is as valuable, dignified, responsible and respectable as that which any similar agency in any human activity can render. Why should pharmacy be so modest and self-effacing as it appears at present to be? There is no reason that I would regard as sufficient. If pharmacy does not enjoy the same respect accorded to other learned callings, it surely is not because it does not merit similar recognition. At present pharmacy lacks self-assertion and the recognition of its rightful place in human affairs. Education is fundamental. Pharmacists as a class are under-educated, and for this condition they themselves are responsible. The awakening must come through pharmaceutical educators and through pharmaceutical educational agencies. Others will not elevate pharmacy, except that through widespread pharmaceutical incompetency a reaction might be initiated by the public which would demand a much higher grade of pharmaceutical service than is now the rule, and which it might seek to secure through legislation.

The St. Louis College of Pharmacy already meets in a very large degree the standard I have suggested. To meet it fully and even to exceed it is one of its

possibilities. With the sure foundation of fifty years of useful work and service, and with the valuable tradition behind it; with an enthusiastic faculty ever ready to recognize the growing needs of the times, and with a full knowledge of the necessity of valiant and persevering industry to succeed in the struggle of existence, the college is ready and willing and able to become acceleratingly useful with the passage of years. The history of the college is enviable. Its half-century of valuable service and influence has created for it the present duties of fostering even higher ideals; of entering upon an even more unselfish endeavor to stimulate and increase its service; of affiliating itself with every activity in the interests of higher educational and professional standards; of increasing its influence for better and higher pharmacy throughout the southwest, and thereby correspondingly throughout the country. The college, no doubt, is fully aware of these increasing duties and responsibilities, and can be trusted to meet them in a capable and competent manner, for it is written, "The glory of this latter house shall be greater than that of the former." The former house, your fifty years of enviable service, is the heritage into which American pharmacy has come; a heritage which we all cherish alike and which, full of honor and accomplishment and emulable tradition, becomes the foundation for the latter house. The former house was begun with splendid forethought and skill, with unselfish devotion to high ideals, with a consecration to high purposes and achievement, and with creative genius by those early pioneers in pharaceutical education who have gone on to th ir reward, and whose courageous enterprise and hallowed memory we so deeply respect and honor, and to whom these splendid exercises are in a large measure dedicated. If all of those early founders could be with us to-night, how they could glory in their work, and how satisfied they could be with the structure for which they laid the foundation, and which their successors so nobly and unselfishly reared. Pharmacy owes them a deep debt of gratitude which can be repaid only by a continuation of their work in the same unselfish and sacrificing way in which they began it, and by a devotion to everything that tends to the fullest fruition of their noble aims. The latter house now to be reared is replete with possibilities of still greater service and achievement, the fruition of possibilities depending only upon the firm resolve and enthusiasm, courageous work and untiring perseverance of those entrusted with the continuance of the work so nobly begun by those who should be counted as among the fathers of American pharmacy. May they so build on that future generations may say, "They builded better than they knew."

THE CULTIVATION OF MEDICINAL PLANTS.*

F. A. MILLER, M. S.



A brief historical review of the subject of drug cultivation in the United States reveals the fact that the subject is not a new one. It is only the revival of an old topic under modern ideas and more attractive possibilities. Concerning the introduction of this work in America, we would doubtless be safe in saying that the first medicinal plants to be cultivated were the so-called "kitchen herbs" in the gardens of the earliest settlers. As early as 1735 Collinson obtained over fifty kinds of "curious seeds" from the Chelsea Physic Garden of England, and Marshall, 1781, was one of the first to attempt the cultivation of the opium poppy in this country. Small gardens containing miscellaneous collections of plants, some of which might be classed as medicinal, were started in different localities only to be abandoned after a few years. Most of these were established for educational purposes and some are still in existence. In these, however, medicinal plants did not predominate, but were only supplementary to certain other families or groups of plants.

Not until the early part of the nineteenth century did medicinal plant-growing appear to have attracted sufficient attention to be considered as a commercial enterprise. The American Garden Calendar enumerates a large number of plants which could be grown in temperate climates and gives general directions for collecting and drying herbs, roots, seeds, etc. In this connection some of our present investigators of medicinal plants seem to be following this early example of McMahon in his Garden Calendar in still enumerating long tedious lists of what they call important medicinal plants and which they emphatically claim could be cultivated successfully in this country upon a commercial scale.

The most extensive operations ever carried on with drug producing plants in this country, were those of the Shakers. They began the work as early as 1800 at the original settlement at Mount Lebanon, New York. It seems they soon established quite a business in medicinal preparations from their cultivated drugs and the work was subsequently taken up by other Shaker colonies, particularly at Union Village, Ohio. Some idea of the amount of drugs produced by the Shakers as compared with the present demands may be gained from the statement that they produced at Lebanon as much as forty or fifty thousand pounds annually. This amount would about equal the average weekly demands of any one of the larger manufacturing concerns of today. While this movement spread somewhat in the Shaker community it never became very general. The Tilden Company, of the same locality, are said to have had as much as forty acres planted to medicinal plants. We find, however, that the work of Tilden & Co. was discontinued about 1880, and the operations of the Shakers gradually diminished until they finally attracted no more attention.

*A lecture delivered to the Purdue Pharmaceutical Society at Lafayette and to the School of Pharmacy at Valparaiso University.

In times past the United States has shown itself capable of supplying materials, not otherwise produced here, which have been cut off by conditions of war. This has been true of opium, which was produced in considerable quantities during the Revolutionary War, the war of 1812 and the Civil War.

At the present time we are feeling the strain of similar conditions and find many of the most important European vegetable drugs not only cut off from the regular channels of trade, but also declared contraband of war. The list of drugs of strictly European origin which might be successfully cultivated in this country is not a large one, especially when we consider only those which are actually essential to the modern practice of medicine and those which from the nature of the plant we might reasonably expect could be grown and cultivated with some degree of certainty. In this list we have such drugs as aconite, belladonna, colchicum, convallaria, digitalis, gentian, henbane, opium, stramonium and valerian. Before seriously considering the cultivation of any of these, they must be studied carefully for peculiarities which may make it impossible to grow them successfully upon a commercial scale. The first thing to consider before deciding what forms one would attempt to grow is a reliable seed supply. This question apparently does not worry the prospective drug grower until he is actually ready to begin, and some have been known to purchase land, erect drying shed, etc., before really knowing what they would grow, or where they could obtain seed of plants of the various medicinal forms.

In the above list, take for instance, aconite. Seeds of Aconitum napellus, the official species, may be obtained from several reliable seed firms of the United States. However, with good seed once in hand, we find that all difficulties are not immediately solved. The question at once arises as to how these should be sown. The average farmer or layman knows and considers but one method of seeding for commercial operations. This is the open field method and unless it can be practiced successfully there is little chance of rapid progress. Aconite is usually considered a tuberous rooted plant with the tubers constituting the part used in medicine, the leaves being little used. These tubers do not reach maturity before the end of the second or third season so that when successfully seeded the plants must be grown through two or more successive years before a crop could be harvested. As to seeding we find that aconite is not easy to germinate even under the most accurately controlled conditions of a greenhouse. This eliminates field sowing and greatly increases the cost of production to say nothing of experienced labor and unusual equipment, such as greenhouses and hot beds. Aconite is often grown as a garden form, where its tall, stately stems, surmounted by the spikes of dark blue flowers are both beautiful and interesting. This is no argument, however, that aconite would be an easy crop under field conditions. In this respect we find too many mistakes have already been made with medicinal plants. Many medicinal plants or their varieties have long been used as garden or decorative forms and upon this fact alone, sweeping statements have been made that they could be easily and economically produced upon a commercial scale. Even some college authorities who have strongly advocated drug cultivation have been accused of committing this error.

Whatever the sources of error, however, it is time for their correction as well as time for the adoption of more conservatism in the statements of those not in-

fomed upon the difficulties of commercial drug growing. To cite an example, a well-known writer in pharmaceutical circles, in giving directions for growing henbane, states in extremely brief language that "culturally it could be associated with stramonium, cannabis indica, tobacco and belladonna." The absurdity of the association of such a group of plants from the standpoint of production is self-evident. A biennial, if we are to consider the pharmacopœial species of henbane which reproduces from seed with much uncertainty, has given repeated crop failures in England and has been so difficult to handle in the United States that at one time the government, as well as some individual workers, had given up their investigations of it, is here classed with a group of plants containing annuals, biennials and perennials, of widely different cultural requirements. Of this group, stramonium and cannabis are annuals of very easy culture, probably no easier one could have been selected than cannabis, and the difference between its cultural requirements and those of henbane could hardly be greater. In the case of tobacco we have a plant, old in cultivation, where all details of propagation, cultivation and improvement have been highly perfected, as contrasted with henbane upon which practically nothing has been accomplished. Belladonna, the last named of the group with which henbane is associated, is a strict perennial of decidedly different requirements. It might be grown either as an annual, harvesting both leaves and roots at the end of each season, or left on the ground for three or four years, harvesting only the leaves annually. It requires a calcareous soil, and takes from four to six weeks for seed germination. We do not know the soil requirements of henbane and good seeds germinate in from six to eight days. As to the actual details of planting, cultivating, harvesting and curing, all of the above forms differ widely and no two of them could be handled by exactly the same method.

Returning to the list of plants under discussion we find that colchicum would give difficulties very similar to those of aconite. The parts used consist of the seed and the underground portion in the form of a corm. Seed may be obtained from manufacturers and crude drug dealers as well as from some European seed firms, but they appear to be very difficult to germinate. I have tried many samples from the colchicum seed of the drug markets and one sample from Haag and Schmidt which was supposed to represent fresh seed, but so far have failed to germinate any of them. The seed has a very hard resistant seed-coat and it is possible that some special treatment may be necessary to facilitate more ready and uniform germination. This difficulty alone is sufficient reason for discouraging any attempt at commercial production without some investigations.

Convallaria, another one of the drugs mentioned, presents a different story. The rhizome is most commonly used and there is probably sufficient of the plant already under cultivation in this country to meet the usual demands for some time. Supplies of stock plants can easily be obtained and propagation from root cuttings offers no serious difficulties. Convallaria would be one of the easier medicinal forms to grow should such procedure become necessary.

In belladonna we find one of the most important of the group of vegetable drugs. The commercial supply of the crude drug has come almost entirely from central Europe. This source of supply is now completely shut off by existing conditions and previous crops have largely passed into the hands of manufac-

turers. As to the near future, the prospects of the drug being collected and marketed are extremely poor. Thus belladonna is one of the most promising medicinal plants from the standpoint of commercial supply and demand. To correct a common and rather widespread idea that this plant might be collected from the wild source in the United States, it should be clearly understood that belladonna (Atropa belladonna) does not occur in the wild state in this country in sufficient abundance for collection. The belladonna of the United States is nothing more than the little nightshade, Solanum nigrum, of common occurrence and which could in no manner serve as a substitute for the true European belladonna.

During the past ten years considerable knowledge has been gained on the cultivation of belladonna in the United States. The investigations of the Bureau of Plant Industry of the United States Department of Agriculture have furnished some valuable information upon the behavior of the alkaloids in the belladonna plant. In California the cultivation of belladonna has been fairly well established in certain localities, but the amount of marketable drug produced there has so far not been sufficient to decrease the annual demands for the foreign drug. The development of this industry has been slow and expensive and many times so discouraging as to almost cause its complete failure and subsequent abandonment. However, the present opportunity promises to be a great stimulus to these efforts and should go far toward seeing belladonna culture in this country, placed upon a sound commercial basis.

Viable seeds of the true pharmacopœial species of belladonna may now be obtained from several reliable sources in the United States in sufficient quantity for both experimental and commercial plantings. One of the most discouraging features of the cultivation of belladonna is the long period required for seed germination. This difficulty places the production of the plant outside of the class of regular farm operations and compels the grower to adopt methods with which he is not ordinarily familiar. When we consider that the seed requires from four to six weeks to germinate, even when under the influence of greenhouse conditions, the difficulties of field sowing are at once apparent. In the central states where weed growth on cultivated land is so luxuriant that almost constant cultivation is required, beginning a few days after the crop is sown, there would not even be a "struggle for existence" in the case of belladonna, for the simple reason that it would rarely come into existence in competition with our rapidly growing weeds. In some of the southern states where growing weather extends through from eight to ten months of the year and where the fall growth of weeds is not a serious factor, field sowings of the seed might be practiced with some degree of success. In our locality, however, experiments extending over several years have demonstrated that the only sure method of obtaining a good stand is by forced propagation and final transplanting to the open field. As to the rate at which plants may be handled by this method we find that an experienced man will move from the seed pans to plant flats or pots, from fifteen hundred to two thousand seedlings per day. This is when the man is working alone and doing all the preliminary work such as soil mixing, filling flats, and other details necessary to such operations. Transplanting to the open field is usually performed at the rate of one thousand to fifteen hundred plants per day. A good man with two helpers to space and drop the plants will work somewhat

faster but his average will not greatly exceed fifteen hundred. Spacing the plants three by three feet in the field will require approximately forty-seven hundred plants per acre. Only rough calculations are necessary to demonstrate the need of cheap but efficient labor in handling a crop of this kind. A mechanical device has been constructed, however, which by the use of three men, not necessarily experienced in handling plants, and a two horse team, will transplant at the rate of from three to five acres per day, at the same time watering each plant and putting on an application of commercial fertilizer.

Everything is not accomplished, however, when the plants are successfully established in the field. In fact the work has only commenced. Subsequent cultivation for belladonna may be about the same as for corn until the plants begin to branch when some forms of single plow must be adopted. In the meantime the crop must be protected from insects and other plant diseases. In this respect the problems involved are somewhat different from those of regular farm crops. In this particular instance both the leaves and roots of the plant are used. This means that any arsenical insecticide applied to the plant, must be used with great caution, or the arsenic, held mechanically upon the surface of the leaves and stems will eventually find its way into some finished product. However, if persistent efforts are made during the earliest stages of growth, the common potato beetle, which is probably the worst insect to contend with, can be eliminated for the entire season. Thus, by the time the plants have reached a size sufficiently large for collecting, the first leaves of the young plants which may have received an application of insecticide have dropped from the stems. The safety of this procedure is evidenced by the free use of arsenicals on cabbage and other garden forms during the early stages of growth. Plant lice have also given serious trouble on belladonna but these can be controlled with any effective nicotine solution. The volatile nature of this substance makes it a perfectly harmless insecticide which may be freely used.

Having protected the plants from insects by some method and carried them safely through the growing season, the approach of harvest brings forth another series of problems. The first to suggest itself will have reference to the time of collection. When the final product is placed on the market its percentage of total alkaloids will be one of the important determining factors in judging the quality, and whether it is belladonna or some other form there will be some definite stage in the development of the plant when the yield of alkaloids or other active principles will be greatest. This condition should determine the time of collection and it can only be ascertained by the collection and testing of many series of samples.

Other questions which the grower would be compelled to answer would be the method of collection for both leaves and roots and the manner of curing these when once they were successfully harvested.

To continue with the list of European drugs we find that it is the opinion of many practitioners that really active digitalis comes only from England, Germany, or some other source, known only to the man who compiles the information on the label. There is in Oregon and Washington an abundant growth of good digitalis which shows an equal value with either the German or English drug. This source of supply could easily take care of the entire demands of the United States. With this abundance of material within easy access it would not be

necessary or wise to attempt the commercial cultivation of digitalis. Those wishing to do so may easily obtain seed of Digitalis purpurea from any reliable seed firm. It cannot be sown in the open field, as several writers have stated, but must be propagated about the same as belladonna. It is a hardier plant, however, and may be carried through the seedling stage at a somewhat lower temperature. It flourishes in the ordinary cold frames and may be placed in these with perfect safety as early as March 1st. Only the leaves of this plant are used. The present pharmacopœia requires that these be collected from flowering plants. It is possible, however, that the revision committee will respond to the influence of recent research upon this subject and eliminate that part of the requirement which refers to the flowering plants. Digitalis being a biennial, the present pharmacopœial requirement makes it impossible to even think of growing the drug at a profit. Indeed it is doubtful whether it could be cultivated and harvested at the end of the first year with any hope of financial returns.

Gentian was another of the drugs mentioned and is one which holds a rather important place in medicine. It would be a promising drug plant to have established in this country, but we must begin at the beginning. Let us not prepare to grow gentian until we at least have gentian to grow. As in many other instances we find that we cannot obtain good seed of Gentiana lutea. I have had seed of this species from Erfurt, Germany, but it failed to germinate. Looking a little further into the history of the plant we find it to be a perennial of which only the roots are used. If we had an abundant supply of good seed with which to begin tomorrow, we could not under these conditions expect to harvest a crop at the end of the present season.

Concerning henbane it is only to be regretted that the United States is not now prepared to produce its own supply of this valuable drug. It is not, however, and the few individuals who have been attempting to grow it should not be discouraged when the government which is at present leading the movement in drug plant cultivation, has almost failed in its attempt to grow the plant. Good seed of henbane is difficult to obtain and I would not advise any one to depend upon those which have not first been thoroughly tested. I have isolated an annual strain, the seed of which germinates quickly and uniformly. Several hundred plants of this strain will be grown this year. This should be a sufficiently large number of plants to test the strain for commercial purposes. The official biennial species has been hard to grow to maturity. Once this is accomplished and a good supply of fresh seed obtained the work on this form should progress more rapidly. One of the worst things to contend with in growing henbane, even on a small experimental scale, is the ravage of the potato beetle. It has been almost impossible to protect the plants from this insect even by the use of the most effective poison.

Concluding with stramonium we find that what was said of digitalis will apply in some degree to this form. With the wild plant growing abundantly in the United States, there is some question of the advisability of attempting its cultivation. It is usually supposed that stramonium will grow in spite of itself, but such is not the case and good results could only be expected on rich soil and by the practice of clean cultivation.

This leads us into a discussion of the problems of drug cultivation from a dif-

ferent viewpoint.We have too often heard of the fortunes to be derived from weeds, of the statements that this or that plant will grow and flourish anywhere and we as often wonder upon what type of reasoning such statements are founded. We know that history records but very, very few fortunes as having originated from weeds except probably through their elimination. It is also evident that all plants now known to man, do possess selective properties which enable them to reach their maximum developments only under environmental conditions which are within certain definite limits. The mere fact that a form has been observed growing as a weed is not good evidence that it will behave in a similar manner when introduced into cultivation. In fact, this is not what we desire. If we merely wish to grow them as weeds and thereby realize an abundant profit we had better stop where we are now, for we would likely derive neither weeds nor profit. What is most desired is to grow medicinal plants not as weeds, but as cultivated plants, improved, perfected and developed in the same manner and to the same degree of perfection as already obtains in the case of other economic forms. To merely grow medicinal plants upon a commercial scale is not sufficient. In fact it is very doubtful whether or not most of them can be produced economically unless some form of improvement is followed. We cannot compete with European producers upon a mere basis of equality. We may be able to compete with them, however, by increasing the quality and yield of the drugs through improvement. This can only be brought about through careful breeding and selection.

The field of research in this respect is almost unlimited and practically untouched. There is hardly a vegetable drug of any importance that does not suggest opportunity and the possibilities for improvement in this line of work. We only need turn to a careful consideration of existing conditions with reference to such drugs as henbane, belladonna, digitalis, stramonium, cannabis, and others for these suggestions. Henbane of disgraceful appearance and low in alkaloidal value is admitted to the United States in order to meet the constant demand for this drug. We have an official description of this drug and a species requirement, but who knows or is able to determine what species are actually included in the crude drug of European origin. From the appearances of many shipments it seems that every species, both plant and animal, which might inhabit the average barnyard has been included in the make-up of this drug. Here is abundant evidence of much needed improvement and it can best be accomplished by the introduction of this plant into cultivation and its subsequent improvement by breeding and selection. The testing of other species of Hyoscyamus may lead to the discovery of a more valuable form, and while Schneider says that the annual form of henbane is not desired medicinally, let us not despair since we find that this annual form has really never been tested thoroughly for its alkaloidal and therapeutic value.

Belladonna is in the same class with henbane, and while the range of species is not so large, still there is the variety lutea, which has so far never been tested. Seeds of this variety were brought to this country by Professor Henry Kraemer and through his kindness we now have this form growing in our experimental grounds. It offers an opportunity for hybridization with the official species Atropa belladonna. Sievers, of the Bureau of Plant Industry, has already shown

what may be expected from consistent selection with the official belladonna. Further work of this nature, but leading to increased yield, together with a better understanding of soil and climatic condition is highly desirable. A similar series of investigations is suggested by the genus Datura. Here, however, the range of species is much greater and the variation in the nature of the alkaloids in the various species is such as to present problems of a different character, and which should lead to the use of some of these species for different specific purposes. The species Datura tatula has recently been shown to be equal to or better than Datura stramonium in the percentage of alkaloids. Both of these species have yielded to selection and hybridization in such a manner as to promise the early development of a much-improved strain. Turning to digitalis, we find a host of species and horticultural varieties of unknown therapeutic value which should furnish an abundance of material for the investigator. Many of these have been found to be extremely toxic, both in the flowering and nonflowering stages.

And so the discussion might be continued in detail for cannabis, conium, colchicum and any others that might be grown within the United States. Sufficient has been said, however, to draw attention to the many difficulties that may be encountered in attempting to grow medicinal plants upon a commercial scale, and of the opportunity and desirability for improvement. The beginner in this work should be advised to commence upon a small, experimental scale with a few of the most valuable drug-producing plants and enlarge his operations as results might indicate. The value of the work cannot be questioned, and while it is vitally important that medicinal plants be grown with the same care and consideration as in the case of corn, wheat or other economic forms, still the step from the wild plant to the highly developed variety of known constitution is a long one and cannot be accomplished in a few days.

It is hoped that nothing has been said which will tend to discourage the present widespread movement in drug cultivation. Rather, we would wish to encourage it but in such a manner as to lead to a fair understanding of the true state of affairs and to dispel the idea that large profits may be expected.

BOTANICAL DEPARTMENT, ELI LILLY & COMPANY, Indianapolis, April 8, 1915.

THREE INTERESTING INCOMPATIBILITIES.*

WILBUR L. SCOVILLE.

The first deals with the action of light and heat on the organic acid salts of the cinchona alkaloids.

In 1853, Pasteur found that on heating acid sulphate of cinchonine to 130° C. for several hours, a poisonous compound was formed which was isomeric with cinchonine. This for many years was regarded as one of the curiosities of cinchonine, possessing no practical interest, because in the use of cinchonine it never became necessary to heat it in this way, and consequently no change was expected. Hesse

* Presented to the Detroit Branch, A. Ph. A., Feb. 19, 1915.

(1868, 1873 and 1875) studied the reaction several times in establishing the constitution of cinchonine, and Howard (1872) and Roques (1895) also studied it.

In 1805, Miller and Rhode found that on heating cinchonine with acetic acid at 100° C. for several hours, a similar compound was formed but which crystallized in a different form. Pasteur had called his product *cinchonicine,* and Miller and Rhode called theirs *cinchotoxin,* but in 1900, Brinner showed that the two substances were identical and that the body crystallizes in two forms.

In 1912, Prof. H. C. Biddle of the University of California, made a study of this reaction at temperatures of 100° C. and also at 36° C. with a view to learning whether this compound was likely to influence the therapeutic action of quinine or the other cinchona alkaloids.

Cinchonicine or cinchotoxin is an isomeric form of cinchonine, one hydroxyl group being changed to a ketone group. This change entirely destroys the febrifuge action of cinchonine and it becomes strongly poisonous. The new body resembles digitoxin in its action, inducing convulsions and death in sufficiently large doses. A similiar change occurs with quinine, but quinicine (or quinotoxin) is not as intense in its action as cinchonicine.

Biddle found that by heating either quinine or cinchonine in the presence of acetic, citric, tartaric, lactic, formic or malic acids, the alkaloids were completely converted to the poisonous isomer in from 24 to 48 hours at 100° C. Half of the conversion, he found, takes place in the first six hours. The change is shown by a darkening of the solution, and a lesser solubility of the product.

The color is a good indication of the change, the depth of color being proportionate to the amount of conversion. With sulphuric and hydrochloric acid there is no conversion, and when these acids are present in excess the change with organic acids is almost entirely prevented.

The change was also studied by Professor Biddle at 36° C,—approximately body temperature. As might be expected, it occurs much more slowly at this temperature, being less than 2% of conversion in 36 hours. But that it occurs at all at this temperature is significant, and stands as a warning for pharmaceutical combinations.

The change is induced by sunlight as well as by heat, and it has been shown that the brown color observed in bottles containing quinine, cinchonine, etc., and their salts, which have been exposed to light during long periods, is due to a small amount of these toxic compounds.

Pharmaceutically the change occurs most frequently in elixirs and syrups containing quinine in combination with iron citrate, such as Elixir of the Phosphates of Iron Quinine and Strychnine, Syrup of Iron Quinine and Strychnine Phosphates, etc.

These, as is well known, tend to darken on storage, especially if exposed to light, and the presence of ferric salts accelerates this action. This darkening is due in part to the change in the quinine by action of the organic acid present and promoted by heat or light. That an elixir or syrup so darkened is not only unsightly, but is also poisonous from the presence of quinotoxin, is the fact to be borne in mind. Doubtless some cases of "idiosyncrasy against quinine" are due to the presence of the isomeric and toxic body.

Such preparations should be stored in amber bottles, and should not be dispensed when a decided darkening has taken place.

Professor Biddle further cautions against the free eating of acid fruits when taking quinine as being liable to form enough of the toxic body to produce unpleasant results.

An interesting instance of the probable quinine combinations which may be made, and which need caution in storing is the following prescription which was recently brought to my attention:

℞ Aspirin.
Quininæ Sulph..... āā ℥ss
M ft. capsul..... xii no.

This prescription was compounded and not called for. At the end of about a year the druggist found that the mixture had liquefied in the capsules, and asked for an explanation. It is probable that a series of reactions had occurred.

First, the water of crystallization in the quinine sulphate may have decomposed the aspirin, liberating salicylic and acetic acids. (The liquid in the capsules had an odor of acetic acid.)

Second, the acetic and salicylic acids converted a part of the quinine, forming quinotoxin, which is a liquid at ordinary temperatures.

Third, the quinotoxin, being a ketonic body, is likely to form an eutectic with salicylic acid, and if this eutectic melts at ordinary temperatures the liquid would thus be further accounted for.

There is some ground for this view, because a mixture of aspirin and quinine sulphate, when heated in a steam bath, soon liquefies and darkens. Quinotoxin is not as dark as cinchotoxin, but forms a brownish-yellow oil which does not crystallize easily. Hence, a slight darkening with quinine means more than with cinchonine. Quinine sulphate with acetic acid does not liquefy, but it does with salicylic acid.

Preparations containing quinine or other cinchona alkaloids, in combination with or in the presence of organic acids, should not be heated nor exposed to a strong light, and if stored for any length of time should be observed carefully. They are safer if a small proportion of free mineral acid is also present. This hinders the change, or may prevent it entirely.

The second incompatibility which I wish to discuss is that of ferric salts on organic acids induced by light.

A few years ago I was called on to explain why Wine of Beef and Iron, containing 20% of alcohol, persisted in fermenting. Sterilization and the presence of antiseptics did not prevent it, but it was noticed that the change, which closely resembled alcoholic fermentation in its physical aspects, and which gave off carbonic dioxide, seemed to be hastened by sunlight. Finally a sample, which showed a considerable pressure when the cork was removed, and which had all the appearance of active fermentation, was proved not only to be sterile itself but to be incapable of growing bacteria or yeasts which were added to it.

Sterile fermentation was certainly something new!

But that it could be anything but fermentation did not occur to me until its sterility was absolutely proved.

About this time abstracts of experiments upon the chemical action of light be-

gan to appear frequently in chemical literature, and this gave the clue to the true cause of decomposition.

Sunlight decomposes many organic compounds, and among the more sensitive are the organic acids, notably citric, tartaric, and lactic acids. This action is accelerated by ferric salts, which are thereby reduced.

Thus Wine of Beef and Iron, whether made from ferric citrate or tincture of citrochloride of iron, contains the iron in the ferric condition and also a citrate. It is furthermore acid in reaction. Hence, in the presence of strong light the iron is gradually reduced to the ferrous condition and the citric acid is completely oxidized to water and carbon dioxide. Like many other reactions, after once started it proceeds more vigorously, and may be energetic enough to burst the bottle.

Amber bottles, of course, inhibit this action. Neither does it occur in the presence of ferrous iron, at least not as vigorously.

In a diffused light the action is slow, yet I have had a bottle of tincture of citrochloride of iron develop considerable pressure while standing on a laboratory shelf where the direct rays from the sun never reached it, in the course of about two years. In direct sunlight this tincture will show an evolution of gas within a few hours.

The iron elixirs, bismuth elixirs, and most liquid ferric preparations are subject to this reaction. They should never be exposed to the direct rays of the sun and are much better preserved in bottles of amber glass.

The third incompatibility deals with combinations with boric acid. You are all doubtless aware of the fact that glycerin will decompose borax and change it from an alkaline to an acid reaction. This has usually been explained as first a combination in which the glycerin unites to form glyceryl borate and liberates sodium metaborate and water, then the water in turn decomposes glyceryl borate and liberates glycerin and boric acid. So the end products have been said to be sodium metaborate, glycerin, boric acid and water.

This reaction was very simple and satisfying—on paper—until in 1911 W. C. Duncan, Ph. C., of Edinburgh, in a paper published in the British Pharmaceutical Journal, pointed out these faults in the reaction. First, that compound esters are not easily formed in the presence of water; second, that such esters are hydrolyzed slowly, not instantaneously, by water; and third, that the liberated acid is much more active chemically than boric acid, for it causes vigorous effervescence with carbonates, whereas boric acid reacts sluggishly with carbonates. He found also that the amount of glycerin necessary to produce an acid reaction is two molecules of glycerin to one of borax, but if a permanent and active acidity is desired four molecules of glycerin must be used for each molecule of borax, or practically an equal weight, and this equation does not balance on the glycerylborate theory.

Mr. Duncan's explanation is that a new acid, glyceroboric acid, is formed which is analogous to glycerophosphoric acid, and is much more active chemically than boric acid.

Mr. Duncan attempted to prove this, but did not succeed in separating the pure substance from its excess of glycerin, and also failed to separate pure salts of lead, barium, calcium and magnesium which he prepared. But he did show that a number of reactions which occur with glycerylboric acid do not occur with ordinary boric acid, and the evidence is strong that the former acid is formed. Simi-

lar combinations occur with sucrose, glucose, and manitol, and with tartaric and citric acids.

Some time ago a complaint was made that an antiseptic tablet containing mercuric chloride, ammonium chloride, tartaric acid and boric acid did not keep well.

Examination showed that the tablets had a marked odor of hydrochloric acid, and subsequent experiments showed that the boric and tartaric acids had combined to form a borotartaric acid which was active enough to decompose ammonium chloride and liberate hydrochloric acid therefrom. Borotartaric acid was a somewhat familiar article in pharmacy fifty years ago, when its chief interest lay in the solubility, which is far greater than boric acid alone. But that the combination was powerful enough to liberate hydrochloric acid from ammonium chloride was not suspected.

Except for antiseptic washes and collyria, borax and boric acid are not prescribed often, but occasional combinations are found in which it is interesting to note that boric acid is not boric acid.

DISCUSSION.

In the discussion which followed, Mr. Mann stated that he had personally experienced very unpleasant results in a recent treatment of a hard cold, which he thought must have been due to taking rhinitis tablets (containing quinine sulphate) and aspirin at short intervals. A rash appeared which could not be accounted for in the normal course of the disease, and which was severe for a short time.

Mr. Seltzer stated that he had known of a number of cases of unpleasant results following the administration of quinine and aspirin in combination, and is now warning his physician-patrons of this incompatibility.

He thought that quinine and aspirin should not be administered together, or in sequence at short intervals.

Another interesting incompatibility which had recently come to his attention was the administration of hexamethylenamine in gelatin capsules. When these were taken into the stomach the gelatin softened and swelled, a small amount of the acid juices penetrated the capsule and started decomposition of the hexamethylenamine and the formaldehyde liberated acted immediately on the gelatin, rendering it insoluble and the capsules failed to dissolve. He cited one instance in which an active cathartic had resulted in a patient voiding a number of such capsules in an insoluble condition.

Mr. Scoville said that this is a particularly interesting case of incompatibility, gelatin being very sensitive to the action of formaldehyde, and such a condition as Mr. Seltzer had described was quite probable. Gelatin treated with formaldehyde has been recommended for enteric coatings, but while such a process was practical under proper conditions and adjustment, there was much danger of overdoing it and obtaining a wholly-insoluble instead of an enteric coating. The recommendation which had recently appeared in drug journals, to immerse gelatin capsules in a 10 percent formaldehyde solution for five minutes, then drying them and using for enteric capsules, should be condemned, because the result will be, not an enteric capsule but an insoluble one. Gelatin is so sensitive to the action of formaldehyde that minute traces show its effects.

The use of formaldehyde is more likely to result in an artificial leather than in an enteric coating.

NEW METHOD OF MAKING SYRUPUS HYPOPHOSPHITUM, U. S. P., AND SYRUPUS HYPOPHOSPHITUM COMPOSITUS, U. S. P.*

F. A. UPSHER SMITH, PH. C.

The pharmacist who wishes to make the official syrups of the hyposphophites encounters the fact that it is necessary to keep on hand five different salts, viz., the hypophosphites of calcium, iron, manganese, potassium and sodium. Even if he has a package of each of these salts it often happens that one or more of them are not on hand in sufficient quantity, or that the hypophosphites of potassium or sodium have deliquesced beyond the possibility of weighing them.

When I was with Noyes Bros. & Cutler, it occurred to me that a formula might be devised for making such syrups by taking advantage of the fact that these hypophosphites are all readily made from the calcium hypophosphite. This conjecture proved to be correct, and I obtained permission from Mr. C. R. Noyes to publish the formula.

In explanation of the process, let me remind you that when a solution of calcium hypophosphite is mixed with a solution of sodium sulphate in equimolecular proportions, these salts interact with formation of sodium hypophosphite, which remains in solution, and calcium sulphate, which settles as a white precipitate, insoluble in the liquid. If we take in this way a solution containing potassium sulphate, manganese sulphate, sodium sulphate and iron tersulphate, and add it to a solution of calcium hypophosphite, the resulting solution will contain the hypophosphites of potassium, manganese, sodium and (ferric) iron, while the precipitate of calcium sulphate is separated by filtration.

An excess of calcium hypophosphite is added to be retained in solution as such, according to the dosage of calcium hypophosphite required by the formula, and a further excess of calcium hypophosphite is added for the purpose of producing the correct amount of hypophosphorous acid, by decomposition with a carefully calculated equivalent quantity of sulphuric acid. The resulting solution is rendered stable by acidifying it in this most natural way with the free hypophosphorous acid so formed.

The formula which I have calculated out along these lines for *Syrupus Hypophosphitum Compositus, U. S. P.*, reads as follows:

Calcium Hypophosphite	67.80 gms.
Hot Distilled Water	400.00 cc.
Diluted Sulphuric Acid, U. S. P.	2.20 cc.

Dissolve and add the following solution:

Potassium Sulphate	14.65 gms.
Sodium Sulphate	26.58 gms.
Solution of Ferric Sulphate	3.38 cc.
Manganese Sulphate	2.40 gms.
Hot Distilled Water	150.00 cc.

When mixed add a solution of:

Sodium Citrate	3.75 gms.
Hot Distilled Water	5.00 cc.

* Read before the Minnesota State Pharmaceutial Association.

Let stand over night, filter, then add:

Quinine Alkaloid	1.100 gms.
Strychnine Alkaloid	0.115 gms.

When dissolved, add:

Sugar	715.00 gms.
Distilled Water, q. s. to	1000.00 cc.

Dissolve sugar in cold water, strain through cotton and add water q. s. Keep in amber bottles.

A sample of the first batch of the syrup made from this formula, dated January 9, 1913, is here for your inspection, in the original bottle in which it was placed. You will notice that it is perfectly bright and clear, with an attractive yellow color. (Sample was exhibited by author at meeting.)

A few weeks ago I constructed a formula for making *Syrupus Hypophosphitum, U. S. P.*, along similar lines, and am using the formula in my store:

Calcium Hypophosphite	70. gms.
Hot Distilled Water	450. cc.

Dissolve and add:

Diluted Sulphuric Acid, U. S. P	1.50 cc.

When mixed, rub in a mortar with

Potassium Sulphate	12.50 gms.
Sodium Sulphate, dried	10.00 gms.

Let stand over night, filter, and in the filtrate dissolve, in the cold:

Sugar	650.00 gms.

Previously mixed with:

Tincture of fresh Lemon Peel	5.00 cc.

Finally strain through cotton and add:

Distilled Water, q. s. to	1000.00 cc.

Keep in amber bottles.

Although at first glance these formulas may appear to be more complex than those of the U. S. P., yet in practice they are easily worked, and they present the great advantage that the pharmacist needs to carry in stock for making these syrups only one hypophosphite, viz., calcium hypophosphite, which is the most stable, the most reliable and by far the cheapest of the hypophosphites. Without any preliminary practice, I am confident that you will be able to make your stocks of these two syrups by the litre or by the barrel, with satisfaction to yourselves, the physician and the patient.

IDEALS IN PHARMACY.*

THEODORE J. BRADLEY, DEAN OF THE MASSACHUSETTS COLLEGE OF PHARMACY.

As this is the day on which you receive your degrees and commence to be graduates in pharmacy it is an appropriate time for you to consider your future course, and I wish to call your attention to some of the conditions that confront the pharmacist today, and have you consider with me certain of the principles that should be adopted and followed by every pharmacist who is to achieve a success that shall be permanently satisfactory to himself.

* An address given at the 1913 Commencement Exercises of the Albany College of Pharmacy.

You have chosen one of the oldest of the professions and one that has undergone many changes. In ancient times and during the dark ages medicine and pharmacy were practiced as one profession and such crude surgical work as was attempted was done largely by barbers. The successive periods in the development of mankind from utter savagery are generally designated by the materials from which our utensils and weapons have been made, as the stone age, the bronze age and the iron age, in the last of which the people that we say are civilized are now living. This present period could very well be sub-divided according to the sources of our medicines. In olden times parts of animals were used, empirically and often superstitiously, then herbs or simples and teas, then various mineral substances, followed by the tinctures and extracts of the early nineteenth century, these in turn largely displaced by the alkaloids and other active principles of plants and by various mineral drugs. Very recently we have made large use of synthetic compounds from coal-tar and similar sources, and, finally, we are entering a period characterized by the use of serums, antitoxins, animal extracts and similar products. Of course these periods are of varying length and overlap each other, and the most valuable drugs of former periods have been retained and probably will be for an indefinite time.

Each of the periods mentioned has been marked by an advance in medical knowledge and this has frequently made it necessary for the pharmacist to adapt himself to changing conditions governing the practice of his profession. At no time in the past have conditions changed more rapidly than they are changing now, and, when I hear a pharmacist complain of his profession, I wonder if the profession is to blame or his own lack of the adaptability necessary to adjust himself to changing conditions. Such complaints are frequently heard and many men oppose the changes, often to their own undoing.

The pharmacist is both a business man and a professional one, in about equal measure, and the general public's recognition that our calling has a professional aspect is one of our most precious possessions and we should do all we can to increase our standing as professional men. In continental Europe the practice of pharmacy is so restricted that there is no likelihood that the pharmacist will lose his professional standing, but in America and Great Britain there has been, recently, a large development of the commercial side of pharmacy, and we are in great danger of becoming mere buyers and sellers of goods. In fact many pharmacists seem anxious to exchange their birthright of recognition as professional men for a mess of pottage in the form of what is termed commercialism. The ideal pharmacist is the one who has retained his professional standing and used it to aid him in achieving commercial success. If we are to continue to be more than merely tradesmen it is necessary for pharmacists to realize this present danger and to overcome it by living up to the ideals of their profession. There is no incompatibility between professionalism and commercialism in pharmacy if they are developed side by side, each in its proper proportion and not at the expense of the other. It is difficult to control this matter by law in this country because of the great American principle of the liberty of the individual, but various attempts are being made to formulate laws to this end and we watch their progress with interest. It is obvious that a man cannot become a successful pharmacist unless he is a good business man, but neither can he become a success-

ful pharmacist unless he is a pharmacist. It may be that reasonable and equitable laws can be secured that will recognize that the practice of pharmacy is as personal as the practice of medicine, or law, or any other profession, and that such practice and the proprietorship of drug stores should be restricted to registered pharmacists. But pharmacists cannot expect the benefits of such laws unless they continue to show that they are professional men with professional ideals.

The frequently enacted special laws regulating adulteration, the sale of alcoholic liquors, the sale of poisons, and similar matters, put on the well-meaning pharmacist a burden that he must bear because pharmacy has in its ranks some men who are a discredit to the profession. All physicians and all lawyers suffer in the same way from the misdeeds of a few quacks and shysters. Many of these laws are proposed by men who see a real or imaginary evil to be remedied, but who know little or nothing about pharmacy or medicine. In dealing with these proposed laws the pharmaceutical associations show their value. These organizations are generally able to prevent the enactment of foolish and harmful laws and to secure the modification of objectionable parts of necessary laws, so that they do not oppress the pharmacist who knows his work and is trying to do right. As an example of this value of the associations may be cited their work on the national anti-narcotic law which has recently become effective. All who had any knowledge of the growing use of habit-forming drugs realized that strict regulation and control of their sale were necessary, but the first bills brought before Congress included many regulations that were impossible of enforcement and which would have worked great hardships on pharmacists and physicians. The national pharmaceutical organizations, including those of the retailers, wholesalers and manufacturers, promptly formed a joint committee which met several times at Washington and was able to show the unreasonableness and impracticability of the objectionable sections so conclusively that the bills were amended and combined and finally passed in a workable form. This beneficial influence on legislation constitutes only one of the reasons why every pharmacist should be a member not only of his local and state associations, but of both national pharmaceutical associations as well. They deserve and need his support and he receives a great deal in return for the moderate yearly cost of membership. The resultant contact with the leaders in his profession, which is enjoyed in these organizations, helps to broaden and develop a man as nothing else can do.

Besides these questions and others of general interest to pharmacists, there are some of just as great importance, but which are of personal and individual application.

During the past two years you have rapidly developed, and largely increased your knowledge or you wouldn't be here today. It is now necessary for you to decide whether or not you are to continue this development, and progress, or stop it, and retrogress. The New York State pharmacy law requires that a pharmacist shall have a minimum education of a general and a special nature. Education informs and develops the mind and the studies pursued in a pharmacy course do these things in about equal measure. What they lack is the cultural value possessed by the languages and history, which is of great benefit in the polish it gives to great minds, but is likely to lead to intellectual snobbery in little minds. Appreciate your education and build upon it, but do not misap-

prehend its value. After we have acquired the most elementary subjects, the value of our education is shown by what we can understand and do, rather than what we remember. You have learned much of the theory and practice that are essential to the trained pharmacist, but this knowledge forms no more than a set of tools with which you are to fashion your careers. If you have studied with no worthier motive than merely to pass your examinations and graduate, and with no real interest in the subjects themselves, and if the faculty has done no more than to teach you a mass of facts, more or less scientifically classified, you and they have failed in your work together. Your course has been successful, only if they have helped you to develop your powers so that you can understand and interpret facts and theories, think for yourselves and work independently. This day is only one of the prominent milestones in your journey through life. You must pass others, but you will not travel far if you know only what has been learned from teachers and can work only under supervision. Each of us has two kinds of education, one that is received from teachers and one that we give ourselves. We receive no diplomas from the courses we give ourselves, but they count heavily in the casting up of our lives' achievements.

A tendency that every one should guard against is the narrowness that is likely to follow close application to one kind of work. One of the chief features of our modern industrial organizations is specialization in work. If such specialization leads to thoroughness it is fine, but if it leads to narrowness also, it is vile. We no longer commission a shoemaker to shape a pair of shoes to our individual measure and expect that he is to do all of the work on them himself, but we buy a ready-made pair that is exactly like many others that have been turned out in a factory where dozens, perhaps hundreds, of men and women have each contributed a small bit of work to them. This modern method leads to economy and uniformity and style, but not always to quality, and never to versatility in the workmen. We are becoming so dependent upon each other that there may be a seriously bad effect upon the race after a few more generations. Perhaps this danger from specialization in work is not near to pharmacists, but, nevertheless the tendency to specialize is here. In the larger stores we now hire prescriptionists, store clerks, soda clerks, porters and others for special lines of work, so that the drug store boy, who did all of these things in turn and as a part of his apprenticeship, is fast disappearing. The clerks have an easier time now and are undoubtedly more comfortable in their work, and probably this is a real improvement in conditions, but we should not allow this tendency to specialize to dominate our own work unless we have already mastered all of the tasks of the modern drug store.

Every pharmacist should cultivate the habit of reading several of the drug journals and occasionally he should buy a new book on pharmacy or one of the related subjects and read that also. This will keep alive his interest in these subjects and inform him on new developments. Antitoxins and biological products do not yet receive much attention in the pharmacy curriculum, but pharmacists should be informed on them and I commend to you, for immediate post-graduate study, a course of reading on these new products.

One of the most satisfactory and profitable assets a pharmacist can have is a reputation as a scientific worker. I have in mind one man who has a drug store

in a city with fifteen thousand inhabitants. Some years ago, after graduating in pharmacy, he did some advanced work in bacteriology and used that and his knowledge of chemistry in working up a practice in clinical testing for the physicians of his city. He was soon appointed city chemist and bacteriologist, at a moderate salary for a small amount of work, but the prestige derived from this position has secured the best trade of the city for his store and his customers are willing to pay advanced prices because of the confidence they have in his products. All of us cannot do just as this man has done, but we can find similar opportunities if we look for them.

After securing the proper training it is necessary that we believe in ourselves. Opportunities constantly present themselves to us. We may have the training which prepares us to profit by them but we need also backbone enough to embrace them. Not long ago the college with which I am now connected was asked to recommend a man to take charge of the pharmacy department in a state university, a position that is attractive in all ways. The university is located in a beautiful town, the salary to start with was $1500 for nine months' work, and there was a great opportunity for the right man to build up a strong department. After considering the matter we suggested two men, both of whom appeared to fill the requirements. The first was selected because he was among the honor men in his class, and the other because of his manliness and ability to make friends. The latter was a good student, though not a distinguished one. What happened? The university wrote to both men and the first one refused to consider the position because, as I understand it, he lacked confidence in his ability to fill it. Of course his reason appeared good to him, but I would much rather have had him undertake the work, as I feel sure that he could have done well in it. The other man secured the position and has been markedly successful in the work. He may not be as distinguished a scholar as the first man, but he makes up for this by a good measure of that quality we call gumption.

It is probable that every one who makes his own way in the world wonders, at one time or another, if he would have been more successful in some other calling than the one he chose to follow. Such thoughts are fruitless and unprofitable after we are established in a definite line of work. If we have the essentials for success in our make-up we shall have some measure of success in the work we are doing; lacking these essentials we should not be successful in any other work. This is true of all callings, except those which require natural artistic gifts. We should not allow ourselves to be influenced by some who can see no good in pharmacy as a profession. Every kind of work has its difficulties and we are likely to magnify those in our own path because we are so near them. We should choose to be with those who square their shoulders and overcome their difficulties rather than with those who are themselves overcome.

With all the changes that have affected pharmacy, conditions are better now, both for proprietors and for clerks, than ever before. A boy without any capital may decide to study pharmacy and it is entirely possible for him to earn his living while obtaining the store experience which is an essential part of his preparation. As his experience grows his compensation is increased and he can work for a part of his time while attending a college of pharmacy, earning enough to pay his expenses. When he completes his training and becomes a registered

pharmacist he has his choice of several good-paying positions, and it is not at all difficult for a dependable man to secure a store on a small first payment and then make the store earn the amount necessary to finish paying for itself. How different these conditions are from those governing other professions, like medicine or law. A man who choses either of those professions must complete a college course and spend some time in hospital or law-office with little or no compensation, and then wait for an indefinite period before he can secure a practice sufficient to support him.

But the man who is to succeed must have certain qualities that are only indirectly connected with his education. The faculty has talked to you so much in college courses about the necessity and value of study that I feel that I should now caution you not to over-estimate the importance of knowledge. You have acquired much more than the average amount of education or you wouldn't be here today, but do not for a moment deceive yourselves into believing that a complete man is made by any amount of knowledge. Your happiness and success will come, mainly, from your character and health and common sense and industry. Many great opportunities come to all men who possess a good measure of these qualities in this country of ours. Your superior education only prepares you to profit by these opportunities to an extent far greater than can the poorly-educated man.

You should appreciate the importance of striving to do right at all times. The man who is trying to do right has a weapon that makes him invincible if he but use it. Remember that your acts and achievements are thrown back on the college which trained you. Your credit will be its credit and your shame would be its shame.

This room is filled with your friends; mothers, fathers, sisters, brothers, and, I trust, sweethearts. Each of you is now, or soon will be, able to support a wife, in comfort if not in luxury. I advise you each to find one by all means. If you get the right one you have a help, not a hindrance, and you become immediately a more dependable man. The world will respect you accordingly and the happiest men are those who are well married. A word to the wise is sufficient, so I shall not pursue this topic further.

In this talk I have asked you to keep alive the professional ideals of pharmacy, to support the pharmaceutical organizations, which will return to you much more than you give to them, to continue your personal development and to adopt high standards of conduct for yourselves. In conclusion, I want to add that the best policy that a man can have is to strive to do right because it is right. Be sure that the things you work for are real. Remember that money-making is not the only possible kind of success and don't mistake the glitter of ephemeral pleasures for the solid gold of abiding happiness.

THE ANALYSIS OF DATURA STRAMONIUM LINNÉ.

L. E. SAYRE AND H. V. CADWELL, UNIVERSITY OF KANSAS.

The sudden cessation of foreign chemical manufacture and importation from European countries, notably Germany, has caused considerable discomforture in American chemical and pharmaceutical circles, since many of the common drugs used so generally here are manufactured abroad. A conspicuous example of the rapid rise in price of these drugs was cited in the Public Health Reports.[1] Thymol increased from $2.00 a pound to $15.00 a pound in three months. Many of these drugs are found in great abundance in the common weeds of this country.[2] The European monopoly of the drug trade has existed chiefly on account of the better established factories there, but since the prices have advanced to the present figure, the American manufacturer can well afford to equip his factory to handle the drug trade of this country.

It was with the idea of utilizing the American stramonium for the commercial production of the valuable narcotics of the belladonna series that this analysis was undertaken.

The Datura Stramonium L, commonly called "Jimson Weed," it is well known, grows profusely throughout the United States, Europe and Asia. It has a varying alkaloid-content when uncultivated, which has been found to range between 0.13 percent[3] and 0.62 percent[4], with a general average of about 0.30 percent. With cultivation the alkaloid-content is increased to a considerable degree, Miller and Meader[5] finding an alkaloid-content of from 0.46 percent to 0.55 percent in plants raised in Indianapolis with cultivation.

The sample of leaves for this analysis was gathered from a hog lot at Fox, Kendall County, Illinois, just after the period of the full flower. After drying in an attic they were ground to pass a 100-mesh sieve. The analysis was made according to a modification[6] of Dragendorff's method of plant analysis, such that the first principal steps could be carried out in a Soxhlette extractor and the succeeding determinations could be made on the one sample.

Moisture.—Samples of from 2 to 3 grammes were dried in a Soxhlette drying oven for six hours at 100° C. The oven was equipped so that a rapid current of air was passing through it all through the interval.

Ash.—The ash determinations were run on samples of about two grammes at as low a heat as possible, finishing the oxidation with the addition of a little ammonium nitrate. The ash was then extracted with water and later with dilute hydrochloric acid.

Nitrogen.—The nitrogen was determined by the well-known Gunning modification of the Kjeldahl method, the albuminoids being calculated by the use of the factor 6.33.

Chloroform-Soluble Constituents.—About five grammes of the finely powdered leaves were placed in a Soxhlett extractor, having all glass connections, and extracted for eight hours with pure chloroform. This procedure brought into solution the alkaloids, glucosides, organic acids, chlorophyll, resins, fats, waxes, camphors, fixed oils and volatile oils:

The volatile oils were determined by evaporating the extract to dryness at the lowest possible temperature, then adding about 10 cc. of water and evaporating at 100° C. The difference in weight gives the amount of volatile oils.

The fixed oils were extracted with petroleum ether and determined directly.

The alkaloids, glucosides and organic acids were then extracted with water and determined directly. Qualitative tests for alkaloid with Mayer's reagent gave a pronounced reaction and for glucoside with Fehling's solution only a slight reaction after prolonged boiling with acidulated water.

Camphors, resins and chlorophyll were determined directly by extracting with 80 percent alcohol.

A residue remained, consisting of a green, gummy mass having a strong herbaceous odor.

Constituents Soluble in 80 Percent Alcohol.—The residue from the chloroform extraction was again extracted in the Soxhlett extractor with 80 percent alcohol for eight hours. The extract was then dried and extracted with water and the water extract divided into three portions. One portion was precipitated with copper acetate, another with neutral lead acetate and the third with basic lead acetate. The copper acetate precipitate consisted largely of tannic acid, the neutral lead acetate of tannic acid and some coloring matter and the basic lead acetate of the coloring matter.

Constituents Soluble in Water.—The residue from the alcoholic extraction was macerated in cold water for two days. This procedure brought the gums and pectin bodies into solution.

Constituents Soluble in Dilute Acid.—The residue from the water extraction was boiled for two hours with a 10 percent solution of hydrochloric acid which brought the starches and some albuminoid matter into solution. The extract was neutralized with potassium hydroxide, which precipitated some of the albuminoid matter. The remainder of the solution was boiled with Fehling's solution to determine the percentage of starch through the reducing sugars.

Soluble in Dilute Alkali.—The residue from the acid extraction was boiled for two hours with a two percent potassium hydroxide solution. This solution contained albuminous matter, humus and pectic acid. Hydrochloric acid precipitated a considerable amount of this matter.

Crude Fiber.—The residue from the alkali treatment was oxidized with bromine water and ammonia to remove the insoluble coloring materials from the cellulose.

Cellulose.—The residue from the crude fiber treatment consisted of cellulose and what mineral matter that had escaped extraction in the previous processes. The amount of cellulose was then determined by burning the residue from the mineral matter. The ash left was called the residual ash in the analysis.

The resulting analysis of stramonium was:

Moisture		7.37%
Chloroform soluble		9.71%
Soluble in 80 percent alcohol		17.29%
Soluble in water		9.37%
Soluble in dilute acid		34.24%
Soluble in dilute alkali		15.84%
Crude fiber extract		.54%
Cellulose		4.64%
Residual ash		1.00%
Total		100.00%
Total ash		17.02%
Water soluble ash	58.60%	
Soluble in hydrochloric acid	31.89%	
Residue	9.51%	
Total	100.00%	
Nitrogen as albuminoid matter		6.33%
Alkaloid assay		.28%

Constituents of the chloroform soluble material:

Volatile oils	20.30%
Fixed oils	15.30%
Alkaloids, glucosides and organic acids	25.00%
Camphor, resin and chlorophyll	12.00%
Residue	27.40%
Total	100.00%

Constituents of the 80 percent alcohol portion:

Tannic acids ppt. by copper acetate	18.58%
Tannins ppt. by neutral lead acetate	7.40%
Coloring matter ppt. by basic lead acetate	33.75%
Material not examined	40.28%
Total	100.00%

Constituents of the dilute acid extracts:

Precipitated by KOH	21.75%
Starch	1.45%
Not examined	76.80%
Total	100.00%

Constituents of the dilute alkali extracts:

Precipitated by acid	28.43%
Not precipitated by acid	71.72%
Total	100.00%

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[4] Vanderkleed: Proc. Penn. Pharm. Ass'n., 1907, 90.
[5] F. A. Miller and J. W. Meader: VIIIth Inter. Cong. App. Chem., Vol. XVI, 57.
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Editorial

E. G. Eberle, Editor.....63 Clinton Building, Columbus, Ohio

THE EDITORSHIP OF THE JOURNAL.

IT is in order to state that the Committee on Publication has elected the writer Editor of the Journal of the American Pharmaceutical Association, which action has been ratified by the Council. It will be recalled by the members of the Association, that, because of personal illness, Dr. James H. Beal, formerly Editor of the Journal, was compelled to relinquish his duties last summer, to take effect as of September 1, 1914, and that Mr. E. C. Marshall, (formerly Advertising Manager) was made Acting Editor until a successor to Dr. Beal could be chosen.

In accepting the honor conferred, the Editor is mindful of the responsibilities he assumes, but reposes confidence in the helpfulness of his associates, namely, that of all the members of the Association. This is the expectation that gives him courage, judging from their work of the past, which has sustained and built up our organization, also realizing that such purpose can only be to grow into greater, or at least continued, usefulness, in the advancement of pharmacy.

The readers will pardon the presentation of thoughts which are not altogether new. If the individual member of an organization is true to himself, he is true to others, and this applies to our organization, which has always stood for exalted principles, in order to serve mankind and to co-operate intelligently with the medical profession. It is unnecessary, at this time, to refer to the leading lights in pharmacy of the past, for we have equally good and true pharmacists with us now; and while we may point to them as chiefs, we are mindful that they represent constituents. Progress is made possible only by co-operating under leadership, and the application of the best thoughts of yesterday with those of today.

The greatest lack of progress, in the past, in all lines of activity, has been due to lack of co-operation, the majority giving the few too much work to do. Hence, the call that every member should recognize his full duty as a member. Quite naturally some must direct and perform the duties of office, but individual initiative and team-work are necessary for a live organization. If a larger number of members can be persuaded to take a more intensified interest in the work of the Association, then a more substantial growth will be assured. What inducement can be offered to bring this about? The Editor will welcome helpful suggestions, for his ardent desire is that his work will stimulate the growth and development of the Association and all the objects it stands for.

It has been stated that one of the objects of the Journal is to publish the papers presented at the annual meetings, but other contributions furnished during the year will not only be welcome, but are earnestly solicited.

The advertisements in the Journal are a source of revenue to the Association and may be readily augmented if the members will encourage the advertisers by their patronage, evidencing that they take cognizance of those who favor the publication. The advertiser naturally expects results from money expended for

publicity. As a matter of business, therefore, he should be convinced that our advertising medium brings returns. The members of the Association have the opportunity in their hands. Will you help?

Publicity-methods at the present time are far different from those of former years. Now, advertised goods are the dependable kind. The writer's views may differ with those of some of the members, but in his estimation, modern advertising literature is educative, and should have a prominent place in professional magazines.

The work of the Editor is largely to co-ordinate the expressed desires of the members relating to the conduct of the Journal and the Association, perhaps to offer suggestions and ideas for development. He speaks only as an individual, though his efforts are assumed to present the views of many. He can be helpful, and much depends upon the efficiency of his services, but he must have inspiration from the co-operation given him by the members. The Journal belongs to the Association, and each and every member of it shares, not only in the advantages gained from the Journal, but also, in the responsibilities of ownership. We represent a working force in pharmacy, the utility of which is dependent upon our individual efforts or neglect. All members have influence, every day's membership affects the organization for good or ill; its purposes are advanced by staunch support, retarded by inaction and injured by discord.

In assuming the duties of the office, the Editor desires to touch elbows with his fellow-members, be a good listener, and do his utmost to maintain the high standard of usefulness established by Dr. James H. Beal for the Journal, so that it may contribute to the upbuilding of the American Pharmaceutical Association, aid in enlarging its opportunities, give thought and assistance to those things which should be preserved, and advance the usefulness of pharmacy in its best estate.

I desire, in conclusion, to express my grateful and sincere thanks for the high honor conferred on me by my election, and express the hope that my work will merit your approbation. My greeting implies action; now let us work together, "one for all and all for one."

E. G. EBERLE.

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THE EDUCATION OF THE MODERN PHARMACY STUDENT.

THE difficulties that obtain in the teaching of pharmacy students are accentuated by the changing character of the drug business. The business has developed both along professional and commercial lines and doubtless this will continue. Those who are desirous for purely professional pharmacies, in this country, look in vain for indicative signs to encourage them; everyone must admit that the trading element in pharmacy is becoming more ostentatious, year by year. Whether we lament or rejoice, we must recognize conditions.

So far as definite records go, the apothecary kept open shop—inviting patrons, not only to have medicines prepared, but also to make purchase of perfume, spice and whatever articles that were seemingly compatible with the drug stock of the times. At the present, the so-called side-lines have an important place in every store, whether the owner is a studious pharmacist or stresses the importance of increasing the volume of sales. The complement to conducting a store is selling

something, hence merchandizing in a drug store is a sequence; the pharmacist renders professional service.

The object of these introductory remarks is not to discuss whether a pharmacist should be a tradesman or not, but to present an aspect of the inherent conditions of the drug business with the view of developing a line of thought relative to the chosen subject.

The apprentice system is no longer in vogue and most of the young men find employment in a drug store without the expectancy of continuing therein. They do not choose to follow pharmacy as a profession, but simply as a means of earning money, and continuing for several years, they realize that in order to receive more wages, they must qualify as pharmacists and thereafter attend a school of pharmacy. In reality they have not selected their vocation—they have grown up to it, fallen into it by accident, been thrust into it by others, or by the pressure of need. Here is the difficulty that is presented for the proper training and education of pharmacists, and here also we have the young men who will shape the pharmacy of a later day.

This is not said in any carping spirit, nor as suggesting that the pharmacists of this country are less efficient than those of Europe, but simply to point out that these young men can be directed in the course which will develop pharmacy along lines we have in contemplation. Are we satisfied with conditions as they exist, or not? Bend the twig accordingly.

The revolutionary changes from hand to machine work have affected pharmacy, so have also the exclusion of many medicinal preparations, the introduction of manufactured remedial agents and the decreased prescription of medicines, all of which have developed the need of vocational training to match these changes. And in the absence of such preparation, the drug business has been unduly commercially developed.

Educators in pharmacy must become expert students of conditions as they actually exist, not continue to follow a syllabus that conformed to the conditions of pharmacy twenty-five years ago. They must be students in the science and art of pharmacy, and they must also be students of life, of progress, of conditions, whether this conforms to their ideals or not. They must, if possible, point out the way to success in the vocation for which they prepare the students in their charge.

While the custom of teaching by subjects must be retained, their relative values should be determined and co-ordinated—with direction to the one grand object of practical application. An education in pharmacy means not only the assimilation of the essential knowledge in order to properly apply it, but also, a wide acquaintance with the possibilities of pharmacy. The kind of learning pharmacists usually need is that which enables them to fight for a living. Every avenue that may be opened to the student of pharmacy, should be pointed out to him, so that if desirable, he may specialize, or add a line of related work that will bring him remuneration and reflect credit. The wonderful development in motion pictures suggests the possibilities of bringing the activities of manufacturing industries to the attention of the students. By this means, also, the life and growth of plants may better be shown than explained, and in connection with the drug gar-

dens that are being established, will contribute much lasting and available knowledge.

In later years educational methods have been shifting toward the sympathetic understanding of the *individual* and building up of the inner life. The same progressive thought must obtain in educating and creating pharmacists; whatever we desire them to be, is one of our problems. Life is largely what we make it, and so with our activities, although they are influenced by environments. We must come to a more definite understanding regarding this important matter, so that there shall be better and more constructive work.

The higher entrance requirements in schools of pharmacy are said to have reduced the number of available pharmacists and increased their wage, thus reducing the net profit derivable from conducting a drug business. There are other economic conditions, also, which have made the business of the small dealers less remunerative. All of this must be admitted, but nevertheless, we must have some fixed ideas by which the progress of pharmacy must be directed, or it will be built-up like the house to which additions are made, without regard for symmetry. This was at least one of the reasons for the construction of the Pharmaceutical Syllabus. A lack of understanding as to what should really be required is evidenced at times by Board of Pharmacy questions. Those of the several branches should be synthetical and have as a purpose, the analysis of the qualifications of the candidates.

The idea that the public school system is a sort of procrustean bed to which all children must be fitted without regard to individual differences, is being displaced by the more rational and progressive one of looking forward to the adaptation of the pupil for life's activities. In the furtherance of such plans, pupils should have an opportunity of knowing what the service in pharmacy means and what it requires. This will enable them to have a voice in the choosing of their vocation; an occupation, if distasteful, dooms the individual to a life of discouragement and disappointment, while if the votary loves his work, it will not only mould his character, and develop his ability, but will help in shaping the destiny of his chosen profession.

E. G. EBERLE.

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THE SAN FRANCISCO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THE time for the next annual convention of the American Pharmaceutical Association is rapidly approaching and the chairmen of the various sections are arranging their programs. Papers should be in their hands somewhat earlier than usual, as some members contemplate visiting the Exposition before the meeting and making side trips on their return journey.

Chairman H. P. Hynson, with whom are associated Messrs. F. H. Freericks, Joseph L. Lemberger, W. C. Anderson and F. M. Apple, were appointed on a committee "to investigate the House of Delegates and see if its usefulness could not be improved." A letter has been issued and was printed in the April number of the Journal, setting forth in a general way the value of this body, not only to the American Pharmaceutical Association, but to State and other organizations,

and we invite your careful consideration and afterward your suggestions, to be communicated to Chairman Hynson.

With all the possibilities of the American Pharmaceutical Association nothing will be accomplished unless the members co-operate. This is the secret of all success in association work; the conventions are always enjoyable, but not the main object. An important change has been made this year by convening the American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy during the latter part of the week, preceding the annual meeting of the American Pharmaceutical Association.

We hope to have a list of all committees in the present number. From now until the meeting every possible effort should be put forth to increase our membership, one new application from each member would double the strength of the Association for doing good. Will you not resolve that your name be attached to one application before the next issue?

It is hardly necessary to say much of the trip involved in going to San Francisco, the opportunities for education and enjoyment are only circumscribed by the contents of your purse. The readers have doubtless informed themselves regarding the Exposition and therefore comment is needless; suffice it to say, San Francisco has made good her promises. The druggists of California anticipate entertaining the largest number ever in attendance at a convention of the American Pharmaceutical Association. Prepare for a profitable meeting, an enjoyable occasion, and the greatest sight-seeing tour of your life. E. G. Eberle.

The Hotel Bellevue has been selected as headquarters for the San Francisco meeting.

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PHARMACY AND THE PUBLIC.

THE newspapers often take a fling at pharmacists and included statements go by unchallenged. As a result the public has an entire misconception of the services rendered by pharmacists to humanity. On the other hand, we are neglectful in not seeking to obtain full credit, when the work of pharmacists is reported in the daily press. At the present time, pharmacy is really a great factor in many industrial lines.

The Journal of Industrial and Engineering Chemistry for April, 1915, in an editorial, makes it very plain that the public has not been informed relative to the vast and varied field of professional activity of the chemist, even ascribing the public sources of relative information to the signs displayed on the corner drug stores. The writer recites that chemists have received less public acknowledgement than the workers of any other profession and recognizes the publicity which has been given recently to the coal-tar dye industries and the public acknowledgement of the chemists' responsible connection with this important industry, as a great accomplishment.

That the editor is well pleased with the publicity given is clearly evident when he states that "it matters little whether the chemical profession comes into view riding the spectacular coal-tar hobby, whether it is 'trimmed' by the public press for its lack of initiative in seizing opportunities, or whether it is charged with an

utter absence of business acumen, so long as it comes to be publicly recognized as an important and as an essential factor in the industrial development and councils of this country."

We abstract further, "if the newspapers make mistakes in discussing our intricate scientific and industrial problems, we should not be content to blink and chuckle in our superior wisdom, but should come out in the open and set them right. If legislative styles point unmistakably to pension log-rolling, bureaucratic log-rolling, tariff log-rolling, it is our duty to teach legislators the value of rolling the logs that will develop the industries which support our profession."

We have thus quoted at length, because what is stated in that editorial might easily be shaped and made applicable to pharmaceutical activities, and also because of the very close existing relations, or perhaps better, because their industries are mutually dependent.

There is need for closer co-operation between industry, science and finance in the United States. When industry and science do not work together, industry is often handicapped by out-of-date and wasteful processes, conversely science has not the opportunity for research. German success must largely be ascribed to a more general and efficient organization supported by a superior educational system; their boast having been that within ten years there would be no such thing in the German Empire as an untrained workman, from the chimney sweep to the high-grade artisan. Liebig, Woehler, etc., founded schools which were later subsidized by Germany and brought into co-operation with her chemical industries.

We must adopt some of the German methods, if we desire to take advantage of the opportunities now before us; there must be co-operation between science, industry and finance. Financiers will profit by promoting industries; the latter will be made more productive through research work in the schools and laboratories; contact with the industries will stimulate the students, pointing out to them leads for research subjects, and professors will be turned from their accustomed system of teaching to methods that will be more practical, even though not as pleasingly ideal.

E. G. EBERLE.

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STATE ASSOCIATION MEETINGS.

THE American Pharmaceutical Association extends to all State Associations best wishes for successful and profitable meetings.

During the past year much has transpired that has affected the drug business adversely, more particularly through the unsettled conditions of the market, influenced by the war in Europe. To such an extent was the commerce of the United States involved that it became necessary to impose a stamp tax, and as usual many articles sold by druggists were designated as a source for such revenue.

Later the Harrison bill was enacted and again druggists were troubled for a time, feeling that a misinterpretation of the law might bring them trouble. Thus far the Revenue Department has given every aid possible and shown fairness. There have been a number of convictions, but these seem to have been deserved. What the inspectors will do, when there have been unintentional violations, remains to be seen. From the very fact that druggists labored for this law and as

a class have signified obedience, it would seem that fair and proper consideration should be given them.

In many states the legislatures have failed to enact laws complying with the National Act. In this issue will be printed a bill prepared by Messrs. J. H. Beal, F. H. Freericks and Hugh Craig, at the request of the National Association of Retail Druggists. This committee is desirous of having comment thereon from State Associations and they will present the same for discussion at the meeting of the American Pharmaceutical Association in San Francisco. In our opinion the committee has been eminently successful in the construction of the bill and your endorsement after careful consideration is expected.

It is hoped that the various State Associations will express their opinion anent the possibilities of the House of Delegates of the A. Ph. A., in bringing about a closer relation with the parent organization. Each state is entitled to a representation of three delegates from their association, and such selection should not be overlooked.

We may congratulate ourselves that there are evidences of returning prosperity. Our greatly increased exports have, in the first nine months of the Government's fiscal year, produced a favorable trade balance of 700 million dollars. If such a condition existed at any other time than during the present European war, it would bring about an unprecedented boom to business.

In again wishing to each association large and successful meetings, an invitation is extended to all their membership to meet with the American Pharmaceutical Association in San Francisco, during the week of August 9-14, 1915.

E. G. E.

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THE MODEL STATE NARCOTIC LAW.

IN this issue under "The Pharmacist and the Law" we have printed in full a bill prepared by Messrs. J. H. Beal, F. H. Freericks and Hugh Craig for a Model State Narcotic Law. The work was done at the request of the National Association of Retail Druggists and is deserving of thankful recognition by pharmacists throughout the United States.

There may be a difference of opinion as to whether a State law is necessary, complying with that enacted by Congress. This has nothing whatever to do with the duty that was assigned the committee and which they so conscientiously and efficiently performed. The bill, in our opinion, is a most complete and satisfactory draft and avoids adding even the least additional burden upon the several branches of the legitimate drug trade.

We invite a careful reading of the bill and if members have suggestions to offer, they will be welcomed by the Chairman of the Section on Education and Legislation, where discussion of the bill has a place on the program.

If a State provision is necessary, then compliance with the Harrison law is essential so as not to subject druggists to further burdens. It should be emphasized that the work of the Committee is deserving of unstinted praise for the efficient manner it was performed, and every encouragement should be extended to accomplish the purpose of the request made of them. Let us never be derelict in acknowledging services faithfully performed. E. G. EBERLE.

SOME OBSERVATIONS ON THE BRITISH PHARMACOPŒIA, 1914.*

(Fifth Revision.)

IRWIN A. BECKER, MICHAEL REESE HOSPITAL.

To learn the purposes of and the reasons for any book, one consults its preface, as it is here authors "state their case." By doing so, one avoids making undeserved and ill-considered criticisms.

In this instance, careful reading of the preface is quite essential for the proper understanding of the subject. Here one will find that certain deviations are permitted, and inclusions made, to broaden the scope of the book to better serve the whole empire.

The "histological characters of the parts of plants officially recognized are fully described whenever the information is important;" so also of drug powders, where "by chemical testing alone the identity of the article in question could not be certainly determined."

Thus omitting non-essential or the more technical details wherever it was deemed permissible. "Words in the text" referring to articles, reagents, and processes defined or described in an appendix, are printed in italics, thus emphasizing their importance and facilitating reference.

We are informed that "the English titles are not, as a rule, literal translations of the Latin titles." Again that the list of abbreviations in the index, in the interest of international uniformity, is in response to a suggestion of Dr. Remington, chairman of the U. S. P. convention, and that the list probably will be found useful to those in foreign countries, who have to interpret the abbreviations of British practitioners.

Because the ℥ symbol is used to represent 60 grains as well as one fluid drachm, and the ℥ symbol is used to represent sometimes 480 grains, sometimes 437.5 grains, as well as one fluid ounce, and are liable to be misread, "it is recommended that prescribers should cease to employ them."

Other features are the use of the centigrade thermometric scale, and metric weights and measures only, in stating temperature and quantities.

Doses are stated in both the metric and the imperial systems, with only approximate equivalence intended. The term millilitre is used instead of cubic centimetre, being shorter, and in better conformity with the metric notation.

In stating doses of fluids, the contraction "mil," and its compounds "decimil" and "centimil" are used—a decided improvement on our present method.

For "metric measures" and "volumetric vessels" the standard temperature is 15.5° C. (60° F.), however, for purposes for which the imperial system is used, vessels are "recognized" which have been graduated at 16.7° C. (62° F.).

The terms "water-bath" and "steam-bath" are specifically defined.

The atomic weights adopted are the 1914 values of the International Committee on Atomic Weights, on the basis of Oxygen=16.

In quantitative testing, proportional amounts of those stated, are permitted.

* Read before Chicago Branch, April 27, 1915.

The last sentence of this paragraph seems like an official recognition of professionalism in British pharmacy, and a compliment to British pharmacists, and reads as follows:

"In short, the details of procedure in these and other chemical operations are now left to the skill and judgment of pharmacists and of analysts who are assumed to be fully trained."

Considering the several monographs, the grouping of the various reactions and tests, and the descriptions of general processes in the appendix has resulted in a great saving of space, producing a smaller book than the present U. S. P.

The simple and direct manner of statement adds definiteness and brevity, for example, Hydrochloric Acid is defined as "a liquid containing 31.79 percent, by weight, of hydrogen chloride, HCl, and 68.21 percent, by weight, of water. And under "Characters and Tests" we find: "Lead limit 10 parts per million. Arsenic limit 5 parts per million." Both statements short and to the point.

"Alumen Purificatum," may be either potassium or ammonia alum. "Amylum" includes corn, rice, and wheat starch.

Under "Acidum Acetylsalicylicum" the test for absence of salicylic acid reads as follows: "When 0.5 gramme is shaken with 20 millilitres of water and 1 drop of T. solution of ferric chloride is added, no violet coloration is produced." Prolonged shaking may sufficiently decompose a sample to give a positive reaction; also allowing the test to stand several hours gives a positive result, thus showing the need of time-limits on certain procedures and tests.

Under "Apomorphinæ Hydrochloridum" the following warning serves the busy pharmacist well: "The solutions decompose on boiling or keeping, with production of a green colour; but remain unchanged for a considerable time if acidified with a trace of hydrochloric acid."

There is a lack of uniformity in the titles of the bismuth salts: "Bismuthi Carbonas" is Bismuth Oxycarbonate, synonym B. subcarbonate; "Bismuthi Salicylas" is B. salicylate, and in the definition named oxysalicylate; "Bismuthi Subnitras" is B. oxynitrate, without the synonym "Subnitrate." Chemical formulas are provided for these salts, thereby suggesting definite and uniform composition, which, however, will not likely be the case.

Cantharidin and its preparations replace Cantharides and preparations, assuring more certain medication.

Infusion Digitalis contains only 7 gm. drug per litre, less than half the U. S. P. strength. Hypodermic injection solutions of few drugs are provided. These are prone to fungus growths, and the use of tablets affords, more readily a closer approach to asepsis.

Formulas for several ophthalmic discs are included.

"Liquor Ammoniæ Fortis" is 32.5 percent by weight, of NH_3, 28 percent being the U. S. P. strength.

The ammonia waters, lime water, witch hazel, and hydrogen peroxide are classed as liquors. "Liquor Cresolis Saponatus" is made with castor oil.

"Oleum Phosphoratum" differs slightly from the N. F. preparation.

"Opium" contains somewhat less morphine than the U. S. P. standard requires.

A number of inclusions and omissions may seem odd to us: Codeine alkaloid and phosphate are included, the sulphate omitted; morphine acetate, hydro-

chloride and tartrate included, the alkaloid and sulphate omitted; strychnine alkaloid and hydrochloride included, the nitrate and sulphate omitted; quinine alkaloid is omitted; pilocarpine nitrate only is official; "Potassa Caustica," potassium hydroxide, is included, sodium hydroxide omitted.

"Sodium Acid Phosphate" is a valuable inclusion.

"Spiritus Rectificatus," alcohol, is 90 percent by volume—the U. S. P. alcohol being 94.9 percent.

There are four diluted alcohols official, namely, 70, 60, 45, and 20 percent, respectively.

"Tinctura Iodi Fortis" is 10 percent, "Tinctura Iodi Mitis" is 2.5 percent. "Unguentum Hydrargyri" contains 30 percent mercury, conforming in strength to the International Agreement. "Unguentum Hydrargyri Ammoniati" is 5 percent, a more commonly used strength. There are 43 ointments in the B. P., the U. S. P. containing only 24. "Benzoinated Suet" replaces benzoinated lard for ointments made in India.

There is a tendency of having opium in disguise in a number of preparations, examples of which are: "Compound Pill of Soap," "Compound Powder of Ipecacuanha"—"Dover's Powder," "Compound Powder of Kino," "Compound Lead Suppositories," and "Compound Tincture of Camphor"—Paregoric.

A number of "coined" names are among the official titles, such as "Barbitone" for diethylbarbituric acid—Veronal, "Benzamine Lactate" for beta-eucaine lactate, "Diamorphine Hydrochloride" for di-acetyl morphine hydrochloride. "Hexamine" for hexamethylenetetramine, "Phenacetinum" for para-acet-phenetidin, "Salol" for phenyl salicylate, "Sulphonal" for diethylsulphone-dimethylmethane, "Methylsulphonal" for diethyl-sulphone-methyl-ethyl-methane.

Some of these names are new, others familiar; taken as a whole, perhaps better than former attempts.

There is a stated limit of error for Alkaloidal Assays, within which preparations must be brought in their final adjustment.

These are some of the things noted in a more or less careful inspection of the book, with a very limited working knowledge of the formulas.

A PLAN FOR A MORE SERVICEABLE A. PH. A. JOURNAL.*

R. P. FISCHELIS, B. S., PHAR. D.

It has been apparent to many members of the American Pharmaceutical Association for some time that the "Journal" of the Association is not giving as satisfactory service as might have been expected, judging by the contentions of those who advocated discontinuing the issuance of a volume of annual proceedings and substituting therefor a monthly journal. In the editorial outlining the policy of the "Journal" published in the first issue of the latter it was stated that it had been brought "into existence to serve the necessities of the Association," and that, "except for its ability to render this service in more complete manner

* Read before New York Branch, A. Ph. A., March 8, 1915.

and form than can be rendered by other existing agencies, the 'Journal' has no excuse for being."

The purpose of this paper is not to adversely criticise the past or present management of the "Journal," but rather to outline a plan by which it can be made to serve the members of the Association with greater satisfaction.

One must realize that the problem of presenting the entire proceedings of the Association and its local branches, together with the great volume of literature brought before the meetings of these bodies, in twelve monthly installments, is no easy task. But the present limitations of the "Journal" make it an inferior representative of the scope and activities of the American Pharmaceutical Association.

Modern journalism of any type demands that news be presented to the reading public as concisely and expeditiously and yet as fully as possible. Members of the American Pharmaceutical Association who present papers at its meetings or at meetings of its local branches are not permitted, according to the by-laws, to publish these papers elsewhere until they have appeared in the Association's Journal. Such a requirement would be just, if the papers were published within two, three or even six months of the date of presentation, but when a member presents a paper at one meeting of the Association and fails to see it printed in the "Journal" until a full year has elapsed, "it will possess value for only one division of the Association, namely the Section on Historical Pharmacy," and it is questionable whether a member will think it worth his while to contribute future papers of any importance to the Association. Only a very small percentage of the members are in a position to attend the annual meetings and besides, there is never sufficient time to read all of the papers presented, so it is really through the publication that members expect to bring their views before the pharmaceutical public.

It should be the function of the "Journal" to serve the members of the American Pharmaceutical Association in such a way as to at least compare favorably with the publicity obtainable through the balance of the pharmaceutical press.

The proceedings of a convention should be chronicled, as far as possible, in one issue of the "Journal" in order to be of interest to the non-convention-goer.

Few people care a great deal for serial stories spread over a half dozen or more issues of a magazine, and members of the American Pharmaceutical Association are not exceptional in this respect. How many, then, are interested enough to read the entire proceedings of a meeting of the Association when the report of the first session may appear in September and reports of succeeding sessions are not published for two, three or four months following.

Under the present plan the contents of the "Journal" include editorials, proceedings of the general sessions of the Association, council business, legal problems, news items of general interest and the papers presented to the meetings of the sections and branches of the organization, together with their discussion.

The editor is confronted with the rather difficult problem of giving each of these topics sufficient space to properly present it and at the same time make the "Journal" the official record of the proceedings of the Association. Is it any wonder then that some one's paper must be deferred for a year before it can be published and that the proceedings of the annual meeting must be spread over

several issues? There is no fault to be found with the editing, but why should an Association like the American Pharmaceutical Association have such poor publicity facilities? The American Medical Association has found it necessary to make its publication a "weekly" and even then there seems to be no space to spare.

While the American Pharmaceutical Association is big enough, in every sense of the word, to support a weekly journal, it would perhaps seem like too great a leap to take at once, to urge a weekly publication at present.

Conditions are such, however, that one need not hesitate to strongly advocate a semi-monthly publication of the "Journal." If we had two issues each month, the material available could be presented in a manner somewhat as follows: Assuming that the dates of publication would be the first and fifteenth of each month, the issue appearing on the first of each month could contain the editorials, selected articles, local branch, and general news, legal items and reports of council business.

The issue appearing on the fifteenth of each month could then be devoted exclusively to the proceedings of meetings, to the publication of the papers presented at the meetings of the Association and its local branches with discussions, contributed articles, and such special features of scientific or general pharmaceutical interest which the editor and the publication committee may deem worth publishing in this number.

If the annual meeting of the Association were held in August, and this plan be followed, the issue of September 15th could contain a full record of the proceedings of the entire meeting, without the papers and their discussion, of course. The segregation of the minutes and proceedings of the annual meeting in one issue for reference would be welcomed by many, even though they attended the meeting.

The issue of October 15th could contain the papers and proceedings of the scientific section; that of November 15th, the papers and proceedings of the commercial section; that of December 15th, the papers and proceedings of the dispensing section; that of January 15th, the papers and proceedings of the historical section; that of February 15th the papers and proceedings of the educational and legislative sections, and so within six months one would have a complete collection of the papers presented at the annual meeting as well as the proceedings of the meeting. Perhaps it would take seven months, if the number of papers is unusually large, or again it might take only four or five months if the number of papers read is below the average. All of this, would, of course, be subject to conditions.

The papers presented to local branches and contributed articles, as well as preconvention matters would keep this "15th of the month number" well supplied with material until the time of the next meeting when the same program could be repeated.

I realize that this is merely an outline and does not present all of the possibilities of a semi-monthly American Pharmaceutical Association Journal in detail, but I believe that if such a plan were followed it would be a distinct advantage to the Association, both from a revenue-yielding point of view, through increased advertising, and from the point of view of service to the members.

The semi-monthly issues could, of course, be gotten up in the same style as the monthly journal is appearing at present.

The plan outlined above has the advantage of enabling those who keep their copies of the "Journal" for reference, to have all of the papers presented to the Association and its branches consecutively arranged and classified under the various sections, by annually binding the issues appearing on the fifteenth of each month, in their numerical order.

If the news matters, editorials, etc., are to be kept, and it is certainly desirable for pharmaceutical workers that they should be, the issues appearing on the first of the month could also be bound in a separate volume.

Thus in the second instance one would have a volume recording a year's American Pharmaceutical Association news and in the first instance one would have a volume resembling the old "proceedings" of the Association, whose loss continues to be felt by pharmaceutical workers.

COMPARISON OF AMERICAN AND EUROPEAN SPRINGS.*

Research of the Department of Balneology of the College of Jersey City.

DR. FELIX VON OEFELE.

During the European war it is impossible or at least inconvenient to send patients to European mineral spring resorts. Therefore our Balneological Department herewith furnishes the following alphabetical list of well known European springs which can be replaced by American springs. The comparison is based on physical, chemical and physiological properties. This list is only preliminary, and it will be continuously supplemented and corrected in our files, if a reason becomes evident. More complete analyses of American springs are soon expected and for these different reasons a Department of Balneology has been instituted at the College of Jersey City.

Aachen—San Luis, California.
Abbach—Santa Rosa, White Sulphur Springs, California.
Abbazia—Atlantic City, N. J.
Adelheidsquelle—Americanus Mineral Well, Michigan.
Aix les Bains—Arrow Head Hot Springs.
Amelie les Bains—Clifton Springs, N. Y.
Antogast—Schooley Mountain Springs, New Jersey.
Apenta—Pluto, French Lick, Indiana.
Appollinaris—Arrington Mineral Springs, Kansas.
Assmannshausen—Lebanon Springs, New York.
Baden-Baden—Jemez Hot Springs, New Mexico.
Baden (Switzerland)—San Diego de los Banos, Cuba.
Baden (Austria)—San Diego de los Banos, Cuba.
Badenweiler—Las Vegas Hot Springs, New Mexico.
Bath (England)—Allegheny Spring, Pa.
Boklet—White Sulphur Springs, Sullivan County, New York.
Brueckenau—Adirondack Mineral Springs, New York.

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* It was deemed that the information given would be of special interest at this time.

Cudowa—Different Springs of Genesee County, New York.
Driburg—Schooley Mountain Springs, New Jersey.
Eilsen, Sharon Springs, N. Y.
Elster—Saratoga Springs, N. Y.
Ems—Des Chutes Hot Springs, Oregon.
Flinsberg (Schlesien)—Napa Soda Springs, California.
Franzenbad—Saratoga Springs, N. Y.
Freiersbach—White Sulphur Springs, N. Y.
Gleichenberg—Watkins, N. Y.
Grand Grille (Vichy)—Dripping Spring at Hot Springs, Arkansas.
Griesbach—White Sulphur Springs, N. Y.
Gurnigel—Cherry Valley Springs, N. Y.
Herrmannsbad—Coppers Well, Mississippi.
Holy Well (North Wales)—Waukesha Mineral Spring, Wisconsin.
Homburg—Condo Deutonian Well.
Honnef—Liberty, N. Y.
Hunyadi Janos—Crab Orchard Springs, Kentucky.
Inselbad—Sanitarium Colfax Well, Iowa and different springs of Jasper and Polk County, Iowa.
Johannisbad-Schmeckwitz—Jordans White Sulphur Spring, Vermont.
Karlsbad—South Dakota Hot Springs, or
San Bernardino Hot Springs, California, or
Atotonilco de San Andres, Mexico.
Kissingen—Saratoga Springs, N. Y., or Ballston Spa, N. Y.
Kreuznach—Climax Springs, Missouri or Green Springs, Ohio, or Catoosa Springs, Georgia.
Landeck—Saint Helena White Sulphur Springs, California.
Leuck—Hot Springs, South Dakota.
Levico—Oak Orchard Acid Springs, N. Y.
Liebenstein—Old Iron Spring at Ballston Spa, N. Y.
Liebenzell—Williamstown, Massachusetts.
Lippspringe—Tate Epsom at Tate Springs, Tennessee.
Luchon—Agua de Vida Spring, California.
Luettich—Sparta Magnetic Well, Wisconsin.
Luhatschowitz—Watkins, N. Y.
Luxeuil—Arkansas Hot Springs.
Marienbad—Saratoga Springs, N. Y.
Mehadia—Addison Sulphur Springs, West Virginia.
Meinberg—Richfield Springs, N. Y.
Monfalcone—Bauff Hot Springs, Canada.
Muskau—Red Mineral Spring at Eddyville, Iowa.
Nauheim—Abenakis Springs, Canada.
Nenndorf—Lower Spring at Avon Springs, N. Y.
Neuenahr—Manitou Springs, Colorado.
Neuhaus—Watkins, N. Y.
Offenbach—Tolenas Springs, California (contains Boron).
Petersthal—White Sulphur Springs, New York.
Pfaeffers-Ragatz—Baths of Aragon, Mexico.
Plombieres—Virginia Hot Springs.
Poestyen—San Diego de los Banos, Cuba.
Puellna—American Carlsbad Springs, Illinois.
Pyrmont—Pacific Congress Springs, California.
Reichenhall—Mount Clemens, Michigan.
Reinerz—Puller Springs, Montana.
San Remo—Florida.
Rehme-Oeyenhausen—Salt Lake Hot Springs, Utah.
Rippoldsau—White Sulphur Springs, N. Y.

Roncegno—Seven Springs, Virginia.
Rubinat—Sowders Springs, Kentucky.
Salso Maggiore—Saint Catherine's Well, Canada.
Salzbrunn—Saint Louis Springs, Michigan.
Schlangenbad—Lebanon Springs, N. Y.
Schmalkalden—Spring Lake Well, Michigan.
Sedlitz—B. B. Mineral Springs, Missouri.
Selters—Stafford Springs, Connecticut.
Sirmione—San Diego de los Banos, Cuba.
Soden—Aetna Hot Springs, California.
Spaa—Aurora Springs, Missouri.
St. Moritz—White Sulphur Springs, N. Y.
Stachelberg—Cairo, Greene County, N. Y.
Sulzbrunn—Sheboygan Mineral Well, Wisconsin.
Salzschlirf—Ballardeville, Massachusetts.
Tarasp—Saratoga Springs, N. Y.
Teplitz-Schoenau—Arkansas Hot Springs.
Tunbridge—Mountain Springs, Pennsylvania.
Tutzing—Lake Champlain, N. Y.
Vetriolo, see Levico.
Warmbrunn—Arkansas Hot Springs.
Weissenburg—Berry Hill Spring at Elkwood, Va., or Bedford Springs, Pa.
Wildbad—Virginia Hot Springs.
Wildungen—Adams Springs, California, or Allouez Mineral Springs, Wis.
Yverdon—Santa Barbara Hot Springs, California.

Comments and correspondence on this subject are requested and will be promptly answered.

THE PRESCRIPTION OF LIFE.*

J. W. ENGLAND.

Aunt 'Liza's former mistress was talking to her one morning, when suddenly she discovered a little pickaninny standing shyly behind his mother's skirts.

"Is this your little boy, Aunt 'Liza?" she asked.

"Yes, miss, dat's Prescription."

"Goodness, what a funny name, aunty, for a child! How in the world did you happen to call him that?"

"Ah simply calls him dat becuz Ah has sech hahd wuk gettin' him filled!"

Life is a funny proposition. It's just like the model prescription described by Joseph P. Remington in his model textbook on "Pharmacy." It may be compatible or incompatible, palatable or unpalatable, bitter, sour or sweet.

It may do good or harm. It may bring joy to the heart of the sick or ease the pain of the dying. It all depends upon the skill with which it is prescribed and compounded.

The prescription has six parts and so has life:

1. We have the "Superscription or heading." In the prescription, this consist of the symbol R, which is an abbreviation of the word recipe, meaning to "take," the imperative of the Latin verb recipio. The use of the inclined stroke on the tail of the R is traced to a custom in the ancient days of superstition, of

* From address to School of Pharmacy, Temple University, at the Smith, Kline & French Co. Laboratory, April 14, 1915.

placing at the top of the prescription an abbreviation or invocation, which represents a prayer to the favorite deity.

In life, the symbol stands for ourselves and we "take" all we can get, from infancy to old age, and constantly invoke the gods for more! Man comes into this world without his consent and he goes out the same way. When a baby, everybody wants to kiss him, and before he goes everybody—don't! "In his infancy he is an angel; in his boyhood he is a devil; in his manhood he is everything from a lizard up; in his dotage he is a fool!"

2. We have "the name of the patient." In the prescription, this is directed to be placed at the head of the prescription and transferred to the label. It is frequently omitted.

In life, we are labelled with a name as soon as we are born, and hang onto it like "grim death to a dead negro," unless we happen to be a "she," when we gladly change it, on request, for another name, sixteen or more years later.

3. We have "the inscription or the names and quantities of the ingredients." In the prescription, this is the most important part of all and requires the greatest amount of care in compounding. It embraces:

a. "The basis or chief active ingredient." The basic ingredient of life is character or moral excellence. Not what the world thinks a man is, but what he is; not what a man has been, but what he may become. With character, a man can fight down all the storms of life unafraid and undismayed, and he can go down to death, if needs be, with a smile on his lips and immortality in his eyes. Without character, he is a rudderless ship, bound to the land of nowhere. And we can train character, just as we can train flowers to become more and more beautiful.

b. "The adjuvant or aid to the basis, to assist its action." In life, the adjuvant is the just appreciation of "the value of time, the need of perseverance, the pleasure of work, the dignity of simplicity, the power of kindness, the influence of example, the obligation to duty, the wisdom of economy, the virtue of patience, the improvement of talent, and the joy of originating."

c. "The corrective, which is intended to qualify the action of the basis and adjuvant." In life, the corrective is rational optimism or a cheerful disposition—looking on the bright side of life and yet appreciating its cheerful disposition—looking on the bright side of life and yet appreciating its serious note. Thinking the best of your fellowmen and not the worst. Full of good cheer and yet responsive to sorrow. Looking upward, and not downward, forward and not backward, and lending a hand—and a smile, "pro re nata."

d. "The vehicle, the ingredient which serves to "carry all" or hold together, dilute them, and give to the whole, the proper consistence, form and color." In life, the "vehicle" is a man's daily work. In its prosecution, he has to use basis, adjuvant and corrective, and as he uses them, "secundem artem," so is the measure of his success.

4. We have "the subscription or directions to the compounder." In life, every man is the architect of his own fortune, and he must frame and follow his own directions. It is a case of "misce et fiat mistura."

5. Then we have "the signa (mark) or directions for the patient." In life, this is the service a man renders his fellowmen.

6. Finally, we have "the names or initials of the physician with the date." In life, the Great Physician orders, and the date is from birth to death—three score and ten years, perhaps a little longer—and then "finis," the prescription of life is completed.

What the end-result will be, in any individual case, no man knoweth, because no one has ever returned from the Great Beyond to tell us. But with faith and courage and cheerfulness, coupled with the best thought of which we are capable, let us compound our prescription of life according to the "talents" given us, so that it shall be of lasting credit to ourselves, our profession and our Alma Mater.

IODINE OINTMENT—DATA AND METHOD OF ASSAY.

LEO H. FRIED, PH. G., PHAR. D.

Before explaining the method of assay, let us first consider the absorption of iodine by benzoinated lard. The free iodine in the ointment is readily absorbed by the lard, even though potassium iodide and glycerin are present to retard this. The figures which I have computed by various experiments will readily show this.

A. N. D. Pullen explains in "The Pharmaceutical Journal and Pharmacist," November 16, 1912, page 610, that if no glycerin or potassium iodide were present in the ointment there would only be one twentieth of iodine in the free state within a few hours. He also claims that in the presence of glycerin and potassium iodide the absorption is attenuated, so that after a lapse of four months there still is 2.92 percent of the original 4 percent in free state. However, I find in my experiments that within a period of ten days there is 1.16 percent of iodine absorbed, leaving 2.84 percent free iodine. This ointment which I experimented with was kept at ordinary room temperature on a shelf, so that the changes of temperature was that of any ordinary room. On examining this ointment ninety days later, I found that only a trace of absorption had taken place. After a period of eight months from the date of compounding, no more iodine was absorbed.

METHOD OF ASSAY.

I first made up one hundred grammes of iodine ointment according to the U. S. P. VIII, page 494, as follows:

Iodine	4 gms.
Potassium Iodide	4 gms.
Glycerin	12 gms.
Benzoinated Lard	80 gms.
	100 gms.

ASSAY FOR FREE IODINE.

Carefully clean, dry and tare 120 cc. Erlenmeyer glass stoppered flask and accurately weigh into it from 3.0 to 5.0 gms. of ointment, using a glass rod for the transfer of same. Add 30 cc. chloroform, shake the flask a few minutes until the ointment is apparently dissolved. Then add 30 cc. of distilled water and shake (this will dissolve the potassium iodide and glycerin which did not go into the chloroformic solution). Immediately, titrate the solution with N/10 sodium thiosulphate, shaking the flask well after every addition until a light yellow color

still remains, and add about 1 cc. cold starch T. S., and continue titration until the blue color of starch iodide disappears after vigorous shaking and does not return in one minute.

I specifically mention that the titration should be immediately performed so that the chloroformic solution will not aid in the absorption of iodine by the lard

CALCULATION.

$$\frac{\text{No. of cc. used} \times \text{factor} \times 100}{\text{Weight of sample}} = \text{percent of free Iodine}$$

On assaying as above I have the following figures of free iodine:

Immediately after making	3.89%
One hour " "	3.51%
One day " "	3.48%
Five days " "	3.06%
Ten " " "	2.84%
Thirty " " "	2.81%
Ninety " " "	2.8096%
Eight months " "	2.8095%

By these figures we see that the absorption goes on slowly until the maximum amount is absorbed.

ASSAY FOR POTASSIUM IODIDE.

Accurately weigh about 5 gms. of ointment into an ordinary 250 cc. Erlenmeyer flask and attach to a distillation apparatus, using as a receiver a 250 cc. glass stoppered Erlenmeyer flask, containing one gm. potassium iodide dissolved in 30 cc. distilled water and add to it 30 cc. of chloroform. Allow the end of the condenser tube to dip into this mixture. Make all connections air-tight, using rubber stoppers and not cork. Mix 5 cc. sulphuric acid with 150 cc. of distilled water, add the acid mixture quickly into the flask. Drop in a few pieces of pumice stone which have previously been heated to redness and dropped into cold water. Finally drop in a piece of ferric alum, about 5 gm. Place upon a wire gauze and apply direct flame very slowly at first, until the purple vapors of iodine have all distilled over. The iodine will sometimes condense in the tube and not go down into the receiving flask; if this happens move the flame and allow the liquid in the flask to suck up into the tube, whence it will dissolve the iodine. Replace the flame and continue distillation until an oily substance comes over. Discontinue the distillation by first removing the tube from the liquid in the receiving flask. Then take away the flame. Wash out the condenser tube and end with about 20 cc. distilled water. Immediately titrate the distillate with N/10 sodium thiosulphate, shaking the flask vigorously after every addition. Note the number of cc. of V. S. used, and calculate total iodine liberated.

CALCULATION.

$$\frac{\text{No. of cc. used} \times \text{factor} \times 100}{\text{Weight of sample}} = \text{percent total Iodine}$$

Total Iodine less *Free Iodine* equals *Iodine from KI*

$$\text{Iodine} : \text{Potassium Iodide} :: \text{Iodine from KI} : \text{X} = \text{percent KI}$$

$$125.9 : 164.76 :: \text{Iodine from KI} : \text{X}$$

I will admit that this distillation process is not the speediest way of obtaining the percentage of potassium iodide in the ointment, but I can say that it is the most accurate. I have tried other processes such as, washing out the potassium

iodide by means of hot water, also using oxidizing agents such as ferric chloride, sodium nitrite, potassium permanganate, manganese dioxide, etc., to liberate iodine from the potassium iodide, and find that liberation is either incomplete or else the oxidizing agents interfere with the final titration. By the above method given, I got an average of 3.91 percent of KI from four titrations.

In conclusion, while this does not directly belong to the assay, I might state that from a therapeutical standpoint, many physicians I have spoken to on the subject, seem to prefer an ointment that is not freshly prepared as required by the U. S. P., but claim that an older ointment has the same effect with milder action.

DEPARTMENT OF PHARMACY, COLLEGE OF JERSEY CITY.

MAGNESIUM PHOSPHATE IN POPPY CAPSULES.

J. E. KIMLEL, PH. C.

Whether or not the knowledge of the existence of magnesium phosphate in poppy capsules is new, the writer is unable to state. The literature, so far as investigated, makes no mention of it.

Since the existence of the anti-narcotic law, preparations of poppy heads will undoubtely receive more attention from the chemist.

Morphine is the important constituent and varies, according to King, from 1 to 2 percent.

To the busy chemist with little time for research, the U. S. P. method for determination of morphine in opium preparations will probably be applied, which may lead to very serious error in the final result.

Magnesium phosphate being slightly soluble in the hydro or hydro-alcoholic menstruum used, is extracted from the ground capsules and remains in the finished product.

In the course of assay, using the fluidextract for example, the extract is concentrated, ether and alcohol added and ammonia water to liberate the morphine. The whole is then vigorously shaken and set aside to allow the morphine to crystallize.

The magnesium phosphate originally present in the capsules and again in the fluidextract is by this process converted into insoluble ammonium-magnesium phosphate, which crystallizes out along with the morphine, providing enough ammonia water has been added to render the whole alkaline, otherwise no morphine will be found in the residue.

The ammonium magnesium phosphate resembles minute crystals of morphine and with a little washing is rendered bright and clean, still retaining a yellowish color, imparted by the mother liquor.

If now the residue is weighed and calculated as morphine, without further purification, as is sometimes done in the assay of opium (the writer is not discussing the propriety of such an omission) the analyst's report will not show the correct morphine content.

From this it can easily be seen that any method for the determination of morphine in poppy capsules that depends upon the crystallization of the morphine

from an ammoniacal solution and the subsequent weighing as such, will be productive of error.

Calcium was also found to a considerable extent in the ash of the capsules but was absent from the precipitate produced by ammonia in the concentrated fluid extract.

ANALYTICAL DEPARTMENT, ALLAIRE, WOODWARD & CO., Peoria, Ill.

THE QUALITY OF COMMERCIAL BLAUD'S PILLS.*

L. E. WARREN, PH. C., B. S.

In view of the known instability of ferrous salts, it has been generally held that pills of ferrous carbonate U. S. P. (Pilulæ Ferri Carbonatis, U. S. P.), commonly known as Blaud's pills, are unstable. Thus, the U. S. Pharmacopœia directs that they shall be freshly prepared when wanted. Pharmaceutic manufacturing houses, evidently holding this requirement to be unnecessary, almost universally sell ready-made Blaud's pills. On the other hand, some firms sell special forms of the preparation with claims of keeping qualities superior to the ordinary pill. Nevertheless, it was recently pointed out[1] that a proprietary brand of Blaud's pill, which the manufacturer claimed to be greatly superior in keeping quality to the ordinary Blaud's pill, and an ordinary commercial specimen, were each of good quality. To determine whether there is justification for the sale of ready-made Blaud's pills, and to determine whether the existence of special forms of Blaud's pills is warranted, an examination of the principal market brands was undertaken. Twelve freshly purchased specimens were examined, together with a specimen of each of three brands which were known to be several years old. Three specimens of the freshly-purchased pills were what the manufacturers called "soft mass" pills.

Some of the claims made for the "soft mass" pills are:

". . . present advantage of being rapidly soluble and disintegrating in the stomach and intestinal tract. . . . Under proper storage conditions they retain their soft consistency and shape perfectly."

"They disintegrate or dissolve readily in the digestive tract.

"They keep well, i. e., do not lose strength under proper conditions of storage.

"They show little tendency to become hard when kept under reasonable conditions.

"They are strictly true to formula."

The "soft mass" pills were "chocolate-coated." The remainder, except where stated to the contrary, were gelatin-coated. Three of the specimens (one of which was old) were not claimed to have been prepared according to the U. S. P. formula, but in general were claimed to contain the ingredients from which ferrous carbonate is produced, so that after ingestion ferrous carbonate in the "nascent" state would be formed in the alimentary tract. A number of the specimens were proprietary. These included Frosst's Blaud Capsules; Laminoids Ferruginous (nascent) Schieffelin; Laminoids Blaud (a specimen known to be at

* Contribution from the Chemical Laboratory of the American Medical Association. Reprinted from the Journal A. M. A., April, 1915.

[1] Queries and Minor Notes, the Journal A. M. A., Oct. 1, 1914, p. 1315.

least seven years old) Schieffelin; Ferruginous Blaud, Upjohn (one of the "nascent" preparations), and two specimens of tabloids (one of which was old). The laminoids were uncoated. The tabloids were sugar-coated. With one exception all of the preparations were stated to contain 5 grains of Blaud's mass, which is equivalent to about 1 grain of ferrous carbonate. This one was a specimen of Tabloids Blaud Pill and Aloin which was known to be at least six and one-half years old. One specimen of gelatin-coated Blaud's pills (Parke, Davis & Co.) also was known to be at least six and one-half years old.

Concerning Frosst's Blaud capsules, the following claims were made:

"Blaud capsules 'Frosst' represent freshly precipitated Ferrous Carbonate of a high percentage of purity, deprived of moisture and incorporated with Castor Oil that it may be readily incapsulated in a freely soluble gelatine covering. The capsules do not harden with age nor the contents oxidize."

The cost of Frosst's Blaud capsules was nearly twice that of any other brand of Blaud's pills examined.

The following statements were made concerning Laminoids:

"The Laminoids (Ferruginous, Nascent) consist of two lamina, one of ferrous sulphate and the other of sodium bicarbonate, united by pressure. When brought in contact with water or the fluids of the stomach, chemical action at once takes place, producing fresh ferrous carbonate with the accompanying salts. An excess of carbonate is present to neutralize the acid in the stomach.

"In Laminoids (Ferruginous, Nascent) the physician will find an absolutely reliable means of administering Blaud's formula, without the possibility of the efficiency of this time-tried remedy being impaired by oxidation and the formation of more or less inert material."

The total iron content in the several preparations was determined gravimetrically, and the amount of ferrous carbonate determined by titration. In order to obtain information as to the variation among the individual pills, the assays for ferrous carbonate were made on three pills taken together and on each of three pills taken singly, or four assays in all. The average was then obtained by dividing by six. In some instances, additional assays were made. The results in some cases show considerable variation from the claimed amount of medicinal ingredients. In some of the brands the average results found by titration for ferrous carbonate were somewhat higher than those obtained by calculation from the determination of total iron. Evidently this is due to the fact that because of great variations in the weight of individual pills, uniform samples could not be obtained. The total iron content of the real Blaud pills when calculated to ferrous carbonate varied between 77 and 156 percent of the amount claimed, and that of the "nascent" preparation between 88 and 183.2 percent of the amount claimed. The determinations of ferrous carbonate did not markedly fall below this, showing that oxidation had not taken place to any considerable extent. The analytic findings are given in the accompanying table.

In order to obtain some information as to the relative disintegrating properties of the several brands of pills, tests were carried out by treating a specimen of each (1 pill) with 90 cc. of 0.2 percent hydrochloric acid at ordinary temperature in a 100 cc. Erlenmeyer flask, and agitating the mixture by inverting once every ten minutes. This process was continued until the pill had become disintegrated, or until the experiment had continued for nine hours. In a second series of tests at the end of six hours, the acid was removed from such of the pills as had

TABLE SHOWING QUALITY OF COMMERCIAL BLAUD'S PILLS

Product	Manufacturer	Claims; Composition	Ferrous Carbonate Calculated from Determination of Total Iron. Percent of Claim	Ferrous Carbonate (by Titration of Ferrous Iron). Percent of Claim	Disintegration in Acid Solution (Hours)	Disintegration in Alkaline Solution Following Acid (Hours)
Blaud Capsules	Charles E. Frosst & Co.	5 gains, approximately ½ grain of iron in the ferrous state	77	79.2*	No effect except to dissolve coating	No effect
Blaud Pill	Sharpe and Dohme	5 grains U. S. P.	91.8	92.6	6.00 5.00	
Blaud Pill, Soft	Sharpe and Dohme	5 grains U. S. P.	99.5	96.2	6.00+ 3.00 2.00 3.50 2.00	0.50
Blaud Pill	John Wyeth and Brother	5 grains U. S. P.	114.2	113.9	8.50 6.00	
Blaud Pill	Eli Lilly & Co.	5 grains U. S. P.	117.7	112.5	3.50 2.00 4.00	
Blaud Pill, Soft	Eli Lilly & Co.	5 grains U. S. P.	121.4	120.1	6.00 7.00 6.00+	1.00
Ferrous Carbonate (Blaud)	Parke, Davis & Co.	5 grains U. S. P.	117.6	121.3	4.50 4.00	
Ferrous Carbonate (Blaud) soft	Parke, Davis & Co.	5 grains U. S. P.	156.2	153.9	2.00 2.50	
Ferrous Carbonate (Blaud) (old specimen)	Parke, Davis & Co.	5 grains U. S. P.	112.3	113.7	7.00 6.00+	6.00†
Ferruginous Blaud	Wm. S. Merrell Chemical Co.	5 grains	117.4	105.9	1.00 2.00 3.00	
Ferruginous (Blaud's)	The Upjohn Company	5 grains	183.2	169.5	5.50 8.00 6.00+	4.00
Laminolds Ferruginous (nascent)	Schieffelin & Company	5 grains	121.3	126.1	1.50 2.00	
Laminolds Blaud's (old specimen)	Schieffelin & Company	5 grains	87.7	74.9	1.00 1.00	
Tabloid Blaud Pill	Burroughs, Wellcome & Co.	5 grains	104.3	104.1	7.00† 6.00+	6.00†
Tabloid Blaud Pill and Aloin (old specimen)	Burroughs, Wellcome & Co.	Blaud Pill 4 grains (20% ferrous carbonate); Aloin 1/20 grain	106.1	113.1	8.50 6.00+	6.00†

* The apparent discrepancies between the amount of ferrous carbonate as calculated from the determination of total iron and that obtained by titration of ferrous carbonate are explained elsewhere in this paper.

† Not completely disintegrated in twenty-four hours.

not become completely disintegrated, and 90 cc. of a 1 percent solution of sodium carbonate substituted. The digestion was then continued as described above until the pill had become completely disintegrated, or until a period of six hours had elapsed. Although the disintegration would undoubtedly have taken place more rapidly at a temperature of 37° C. and possibly faster in a weak pepsin solution, it is believed that for comparative purposes the results obtained are sufficient.

The results not only showed great variation among the several brands, but also considerable variation among the several pills of the same brand. The Laminoids disintegrated the most readily, but these were not coated. The next in order were the Parke, Davis & Co. brand of soft mass pills and the Sharp & Dohme brand of soft mass pills. It should be noted that the Lilly brand of soft mass pills disintegrated more slowly than the ordinary kind from that firm. The results are given in the table.

The results of the examination refute the commonly assumed instability of ready-made Blaud's pills. On the other hand, it is seen that the Blaud's pills of the market are not very reliable as to iron content. A range of from 77 to 182 percent of the claimed amount of ferrous carbonate denotes carelessness in manufacturing or lack of proper analytic control over the finished product. Further, the examination demonstrates that the "nascent" preparations, the soft mass pills, and the gelatin encapsulated oily suspension show no advantage over the ordinary kinds. In view of the findings, physicians should consider the advisability of directing the pharmacist to prepare Blaud's pills according to the U. S. P. whenever they are prescribed.

THE N. A. R. D. DRAFT FOR A STATE ANTI-NARCOTIC LAW.

J. H. BEAL, URBANA, ILL.

The N. A. R. D. Draft for an Anti-Narcotic Law suitable for state enactment was prepared by a special committee of three appointed by the N. A. R. D. Executive Committee, the special committee consisting of J. H. Beal, Mr. Hugh Craig, Editor of the N. A. R. D. Journal, and Frank H. Freericks, Esq., of Cincinnati.

The principal purposes of the draft are:

(1) To promote uniformity in state legislation respecting the possession and sale of anti-narcotic drugs.

(2) To provide a body of well-considered provisions from which selections can be made for use in states where the existing laws need to be revised in order to bring them into correspondence with the Harrison Act.

(3) To provide a list of provisions that can be utilized in preparing substitute bills for less acceptible measures which may be introduced into state legislatures.

To the objection that the bill seems rather lengthy it may be said that it is not really as long as it seems to be, its apparent length being due mainly to the separation of Section One into series of brief sub-sections or paragraphs, each dealing with some particular subject or exemption. It is true that all of these sub-sec-

tions might have been condensed into a single paragraph by the liberal use of general terms and connective, but the advantage gained by any such condensation would have been more than offset by the loss in directness and certainty, the two prime requisites in statutory enactments, especially in those which have a criminal bearing.

Another reason the committee had in mind was that an "expanded" or "open" form of draft would render it easier for legislative committees to select the provisions which, with slight modifications, will best suit their requirements.

The same advantage will apply in the striking out of specific provisions which may not be acceptable, or in adding other features which may be desired, since almost any of the specific provisions of the draft can be stricken out or modified without disrupting or destroying the general coherence of the bill.

The following brief review is intended to set forth some of the more important features of the draft.

The first paragraph of Section One adds to the drugs named in the Harrison Act "alpha- and beta-eucaine," and "synthetic substitutes," because it was thought that in most states there would be a demand for their inclusion. If it is not desired that these drugs be included the words can be stricken out without disarrangement of the paragraph.

The second paragraph of this section makes proof of possession *prima facie* evidence of dealing in the drugs possessed, which should be of value in the administration of the law in cases where considerable quantities of the drugs are found in the possession of persons not authorized to deal in them, but where no direct evidence of dealing in them can be secured. The presumption created by the paragraph being only *prima facie*, the defendant will be permitted to show that his possession was lawful and did not involve a dealing in the drugs possessed.

If not desired in the law, the provision can be dropped without marring the draft.

Taking them in their order, the various provisions or exceptions of Section One are as follows:

(*a*) This proviso exempts from all of the requirements of the law such chemical constituents and derivatives of opium, coca leaves, and their alkaloids as do not possess narcotic or habit-forming properties. There are quite a number of these innocent substances, such as meconic acid, apomorphine, etc., that are neither narcotic nor habit-forming, and it would be absurd to apply to them the restrictions imposed upon dealing in the harmful compounds and derivatives.

The presence of this saving clause in the bill will also tend to check the activity of over-zealous officials who might be inclined to stretch the meaning of the word "derivative" so as to include many other things not intended to be covered by the law as, for example, that "benzoic acid should be regarded as a derivative of cocaine because it is one of the substances produced by the decomposition of that alkaloid," etc.

It cannot be contended that the presence of this sub-section will in any way weaken the effectiveness of the measure for the control of the sale of habit-forming narcotic drugs, since in a later section it is provided that defendant claim-

ing the benefit of any exemption under the law must sustain the burden of proof to establish his right to such exemption.

(*b*) Sub-section *b* enumerates certain persons, manufacturers, hospitals, institutions etc., who may lawfully possess the drugs enumerated in the first paragraph of Section One. To prevent the possible organization of fictitious companies, hospitals, etc., for the purpose of dealing in these drugs in an illegitimate way, this sub-section makes it necessary for all such companies and institutions to be authorized or licensed in accordance with Section Three, and by reference to the latter section it will be seen that the only institutions which will need this special license will be those which do not have a licensed pharmacist, physician, dentist or veterinarian in their employ. As practically all reputable houses and institutions have one or more of such qualified persons on their staffs, this provision should not occasion any hardship to legitimate interests.

If deemed desirable by legislative committees, the list of persons covered by sub-section *b* can be either increased or decreased.

(*c* & *d*) Sub-sections *c* & *d* provide for the possession of the drugs by persons other than those who deal in them on their own account.

(*e*) Sub-section *e* provides for the possession and sale of mixtures containing certain limited amounts of narcotic drugs. The quantities named are the same as those specified in Section Six of the Harrison Act, but the wording is slightly modified to indicate that these permitted quantities can not be cumulated, i. e., that it will not be permissible in such preparations to use the maximum amount of one opium alkaloid plus the maximum amounts of each of the others, unless the total of such alkaloids will not exceed the maximum of that which would be contained in the extractive of two grains of opium. The accompanying proviso is also modified by requiring the admixture of other active drugs with the narcotic drugs, so that the intention of the act could not be defeated by dispensing the latter mixed with large quantities of inert diluents, as water or sugar.

(*f*) The provisions of sub-section *f* govern the sale of narcotics by authorized dealers, etc., to each other or to persons entitled to obtain them without a prescription. Though differing somewhat in their phraseology, these provisions are practically the same in effect as the corresponding provisions of the Harrison Act, so that the use of the order blank and the making of the records required by that act will serve as a compliance with the provisions of the state law, thus avoiding the duplication of records relating to the same transaction.

(*g*) Sub-section *g* relates to prescriptions and the requirements as to dating, filing, repetition, etc., and these requirements are substantially the same as are to be found in most of the state laws which deal with the subject. By the reference which is made to sub-section *e* it is evident that the requirements concerning filing, dating, repetition, etc., do not apply to prescriptions for the quantities specified in that sub-section.

The requirements for the labeling of containers are made specific, so as to prevent the dispensing of narcotic mixtures in such a manner that they cannot be traced to the prescriptions upon which they are alleged to be based.

(*h*) Sub-section *h* relates to the dispensing of narcotic drugs by licensed physicians, dentists, and veterinarians. It does not place any limit upon the *quantity*

which they may dispense in legitimate practice, but does require that a *record shall be kept* when more than the quantities specified are dispensed at one time.

It is conceded that there should be no unnecessary interference with the rights of licensed physicians to administer to their legitimate patients such drugs as they may deem necessary, but it must be remembered that exemptions of this kind, if too liberal, will permit of the practical nullification of the law by unscrupulous practitioners, and it is essential therefore that some limit be placed upon the quantities of such drugs which may be dispensed without keeping a record.

The committee does not assert that the quantities specified in this sub-section are the most appropriate or suitable quantities, and it will be open to legislative committees who may desire to use this sub-section to either increase or decrease these exempted quantities as in their discretion it may seem advisable.

Section Two of the draft relates to the prescribing or furnishing of narcotic drugs for the use of habitues. It permits a licensed physician to prescribe or furnish whatever he may deem necessary for the treatment of a patient for the cure of a drug habit, but requires certain notices to the state board of health and the keeping of certain records, in order that unscrupulous members of the profession may not be tempted to abuse their professional privileges by supplying habitues with the drugs in quantity without making any attempt whatever to effect a cure.

The same section prohibits the prescribing or furnishing of the drugs by a dentist for the use of any person not under his professional treatment as a dentist, or for any other purpose than as a part of such treatment. Veterinarians are also forbidden to prescribe or furnish such drugs for the use of any human being.

Section Three provides that certain manufacturers, dealers, hospitals, etc., that do not have a licensed pharmacist, physician, dentist, or veterinarian in their employ to dispense the drugs covered by the law, must obtain a license from the state board of pharmacy before they can lawfully possess or handle them.

The second paragraph of this section authorizes the sale of preparations containing the quantities exempted in sub-section *c* of Section One only by dealers having a fixed place of business and located at least one mile distant from a licensed pharmacist or physician, and only when specially licensed by the state board of pharmacy. That is to say, itinerant vendors will not be permitted to sell preparations containing narcotic drugs in the quantities named in subsection *c* of Section One, nor will general stores be permitted to handle them unless their place of business is at least one mile distant from the place of business of a licensed pharmacist or the office of a licensed physician.

(This licensing feature, of course, has nothing to do with pharmacists or other persons who are authorized to deal in these drugs by other provisions of the bill.)

Under the third paragraph of this section the state board of pharmacy will not grant such special license unless satisfied that the preparations will be used only for legitimate purposes.

Section Four of the draft relates to penalties. In addition to the offenses ordinarily provided for in anti-narcotic laws, it introduces some necessary prohibitions regarding the forgoing, altering, or destruction of prescriptions or other records, the making of false pretenses for the purpose of obtaining narcotic drugs,

etc., and exempts pharmacists from liability for the innocent dispensing of such drugs upon false or altered prescriptions, etc.

The penalties prescribed are *maximum* penalties only, so that the court will be able to "make the punishment fit the crime," by inflicting a light fine for merely technical or trivial offenses.

The last paragraph of this section makes it necessary for those who claim the benefit of exemptions in the law to show by the evidence that they are entitled to such exemptions, and is a quite necessary provision if the law is to be effectively enforced.

Section Five provides for suspension or revocation of the license of persons who have been twice convicted of violating the law, but the convictions must be obtained in a "court of record," i. e., in a court above the grade of the ordinary magistrate's court, and must be for "substantial," and not for merely trivial or technical violations.

The same section also provides the means for the revocation of the license of one who has become so addicted to the use of drugs as to make him an unsafe person to handle them.

The last paragraph of Section Five also makes it possible to prosecute separately a member or agent of a corporation, etc., and inflict upon such persons the penalty of imprisonment and revocation of license.

The remaining sections are of the usual sort, and present no features deserving of comment.

The committee do not offer the draft as an ideal measure that cannot be improved upon, but rather as one which has been formulated after a considerable study of the subject and as one presenting a variety of provisions that should be useful to legislative committees who are charged with the framing of bills for state enactment.

It is natural to expect that in a bill the length of this there will be particular features to which all will not agree. The committee itself did not always reach its decisions by a unanimous vote, and therefore will not feel aggrieved if its conclusions do not in every instance meet with the full approval of those who were not members of the committee.

It is perhaps needless to add that the committee does not advocate the enactment of this or of any other measure unless there is a real need for new legislation to correct existing state laws or to bring them into correspondence with the Federal law, known as the Harrison Act.

Never to despise, never to judge rashly, never to interpret other men's actions in an ill sense; but to compassionate their infirmities, bear their burdens, excuse their weakness, make up and consolidate the breaches of charity happened by their fault, to hate imperfections, and ever to love men, yea, even your enemies; therein the touchstone of true charity is known.—*N. Caussin.*

REPORT OF COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, George M. Beringer, 501 Federal St., Camden, N. J.

ALUMINI CHLORIDUM.

Aluminum Chloride.

1. It contains Aluminum Chloride ($AlCl_3 + 6H_2O = 241.57$) corresponding to not less than 20.5 percent of Aluminum Oxide Al_2O_3. Aluminum chloride is to be kept in well-stoppered containers.

2. White, or yellowish white, deliquescent, crystalline powder; nearly odorless; taste sweet and very astringent.

3. Soluble in about 1 part of water and about 3 parts of Alcohol at 25° C., also soluble in glycerin.

4. An aqueous solution (1 in 10), should be clear, and show an acid reaction to litmus, and yield with silver nitrate T. S. a white curdy precipitate insoluble in nitric acid, and with ammonia water a white gelatinous precipitate almost insoluble in an excess of ammonia water, and with potassium hydroxide T. S. a white gelatinous precipitate completely soluble in an excess of the reagent.

5. 10 cc. of an aqueous solution (1 in 100), after the addition of .2 cc. of barium chloride T. S. must not become cloudy within one minute (limit of sulphate).

6. 10 cc. of an aqueous solution (1 in 50), must not respond to the Time-Limit Test for *heavy metals* omitting the addition of ammonia water.

7. The addition of .3 cc. of potassium ferrocyanide T. S. to 20 cc. of an aqueous solution (1 in 150), must not produce a blue coloration within one minute (Iron).

8. 5 cc. of an aqueous solution (1 in 25), must not respond to the U. S. P. Modified Gutzeit Test for Arsenic.

9. Dissolve about .5 gm. of the salt, accurately weighed, in 100 cc. of water, add 1 gm of ammonium chloride and then precipitate the aluminum hydroxide by the addition of a slight excess of ammonia water to the boiling solution. Collect the precipitate on a filter, wash it with distilled water, dry, ignite thoroughly and weigh. The weight of the aluminum oxide so obtained must not be less than 20.5 percent of the weight of the aluminum chloride used.

ALUMINI SULPHAS.

Aluminum Sulphate.

1. It should contain not less than 99.5 percent of pure Aluminum Sulphate $Al_2(SO_4)_3 + 18H_2O = 630.67$.

2. A white, crystalline powder, or shining plates, or crystalline fragments; without odor, having a sweetish and afterwards an astringent taste, and permanent in the air.

3. Soluble in 1 part of water at 25° C. (77° F.), more soluble in boiling water, but insoluble in alcohol.

4. When gradually heated to about 200° C. (392° F.), it loses its water of crystallization (45.7 percent of its weight).

5. The aqueous solution of the salt has an acid reaction upon blue litmus paper.

6. The aqueous solution of the salt yields, with barium chloride T. S., a white precipitate insoluble in hydrochloric acid; and with potassium hydroxide T. S., a white, gelatinous precipitate which is soluble in an excess of the alkali, but which is again separated on the addition of a sufficient amount of ammonium chloride T. S.

7. If 1 gm. of Aluminum Sulphate be gently heated with 5 cc. of potassium hydroxide T. S., the liquid should not evolve the odor of *ammonia*.

8. A filtered, aqueous solution of the salt (1 in 10) should not become more than faintly opalescent within five minutes after the addition of an equal volume of tenth-normal sodium thiosulphate V. S. (limit of *free acid*).

9. The aqueous solution of the salt (1 in 20) should not respond to the U. S. P. Time-Limit Test for *heavy metals*.

10. The addition of 5 drops of potassium ferrocyanide T. S. to 20 cc. of the aqueous solution of the salt (1 in 50) should not pro-

duce at once a blue coloration (limit of *iron*).

11. 5 cc. of an aqueous solution (1 in 25) must not respond to the U. S. P. Modified Gutzeit Test for Arsenic.

12. Dissolve about .5 gm. of the salt, accurately weighed, in 100 cc. of water, add 1 gm. of ammonium chloride and then precipitate the aluminum hydroxide by the addition of a slight excess of ammonia water to the boiling solution. Collect the precipitate on a filter, wash it with distilled water, dry, ignite thoroughly and weigh. The weight of the aluminum oxide so obtained must not be less than 16.1 percent of the weight of the aluminum sulphate used.

ANTIMONII OXIDUM.

Antimony Oxide.

1. It contains not less than 97 percent of antimonous oxide (Sb_2O_3=288.4).

2. Antimony Oxide is a white or grayish white powder odorless and tasteless.

3. It is insoluble in water, alcohol or nitric acid, readily soluble in hydrochloric acid without effervescence, and also in a warm solution of tartaric acid or in a boiling solution of potassium bitartrate.

4. When heated it turns yellow, becoming white again on cooling. At a dull red heat it fuses to a yellowish liquid, volatilizing at a higher temperature.

5. When dissolved in a slight excess of hydrochloric acid and this solution diluted with a large volume of water, a white precipitate is produced which is changed to orange by hydrogen sulphide.

6. The solution of 0.1 gm. of the oxide in 3 cc. of hydrochloric acid and 5 cc. of distilled water is not rendered turbid at once by a few drops of barium chloride T. S. (sulphate).

7. The solution of 0.1 gm. of the oxide in 10 cc. of distilled water and 1 gm. of tartaric acid does not become more than slightly opalescent after the addition of 0.2 cc. nitric acid and 0.2 cc. silver nitrate T. S. (chloride).

8. Dissolve 0.5 gm. of the oxide in 10 cc. of hydrochloric acid, dilute the solution with distilled water until it begins to become permanently turbid and then precipitate with hydrogen sulphide. This precipitate when thoroughly washed with distilled water dissolves in ammonium or sodium sulphide T. S., without leaving a black insoluble residue (copper, lead).

9. A solution of 0.1 gm. of Antimony Oxide in 5 cc. of hydrochloric acid does not respond to Bettendorf's test for arsenic.

10. Weigh accurately about 0.2 gm. of Antimony Oxide, dissolve it by warming with a solution of 1 gm. of tartaric acid in 10 cc. of distilled water, (adding a few drops of hydrochloric acid to aid the solution), nearly neutralize the solution with sodium carbonate, then add 40 cc. of a cold saturated solution of sodium bicarbonate and titrate at once with tenth-normal iodine, using starch T. S., as indicator.

11. The titration shows not less than 97 percent of antimonous oxide. Each cc. of tenth-normal iodine corresponds to 0.007210 gm. of antimonous oxide.

ANTIMONII SULPHIDUM PURIFICATUM.

Purified Antimony Sulphide.

1. It contains antimony corresponding to not less than 97 percent of antimony trisulphide (Sb_2S_3=336.61).

2. Purified Antimony Sulphide is a heavy grayish black powder, odorless and tasteless.

3 It is insoluble in water or alcohol, soluble in hydrochloric acid with the evolution of hydrogen sulphide.

4. At a temperature below a red heat it fuses to a dark brown liquid.

5. A solution made by boiling the sulphide with a moderate excess of hydrochloric acid, until the vapors no longer blacken lead acetate paper, yields, when added to about ten times its volume of water, a white precipitate which is changed to orange by hydrogen sulphide.

6. Intimately mix 2 gm. of the sulphide with 8 gm. of pure sodium nitrate, fuse the mixture in a porcelain crucible, and after cooling boil the mass with 25 cc. of distilled water and filter. Acidulate the filtrate with nitric acid, boil it until no more nitrogen oxide is evolved, then dissolve in the solution about 0.1 gm. of silver nitrate, filtering again, if necessary, and cautiously over lay 10 cc. of this solution with a few drops of ammonia water. Not more than a white cloud, but no red or reddish precipitate appears at the line of contact of the two liquids (limit of arsenic).

7. Weigh accurately about 1 gm. of Purified Antimony Sulphide, mix it with 20 cc. of hydrochloric acid, and then with a clear solution of 5 gm. of tartaric acid in 10 cc. of water and heat the mixture gently on the

water bath until the vapors no longer blacken lead acetate paper. Now filter the solution, wash the residue, if any, with distilled water until the washings are neutral to litmus and ignite it. The weight of the residue does not exceed 1 percent.

8. Dilute the filtrate and washings from the preceding test to 200 cc., nearly neutralize 50 cc. with sodium carbonate, add 40 cc. of a cold saturated solution of sodium-bicarbonate and titrate at once with tenth-normal iodine, using starch T. S. as indicator.

9. The titration indicates an amount of antimony corresponding to not less than 97 percent of antimony trisulphide. Each cc. of tenth-normal iodine consumed corresponds to 0.008415 gm. of antimony trisulphide.

BERBERIS.

Berberis (Oregon Grape Root).

1. The rhizome and roots of species of the section *Odostemon Rafinesque* of the genus *Berberis* Linné (*Fam. Berberidaceae*).

2. Cylindrical, more or less knotty, strongly branched, usually cut into pieces of varying length and up to 45 mm. in diameter; externally light yellowish-brown, longitudinally wrinkled and short scaly; fracture hard and tough; bark 1 mm. in thickness, easily separable into layers, wood yellow, the color more pronounced upon wetting, distinctly radiate, and showing rings of growth; pith of rhizome small, sometimes excentral; slightly odorous; taste distinct, very bitter, tingeing the saliva yellow.

3. Pieces without the bark should be rejected.

4. *Powder*—Yellowish-brown; composed chiefly of fragments of wood-fibers associated with a few tracheæ and medullary rays; wood fibers yellowish, scarcely giving any reaction with phloroglucinol T. S. and hydrochloric acid, and with large, simple, transverse pores; tracheæ chiefly with bordered pores, occasionally reticulate; medullary rays 1- to 12-cells wide, and in very long rows; starch grains single or 2- to 3- compound, the individual grains being irregularly spherical, 0.003 to 0.010 mm. in diameter and occasionally larger.

BISMUTHI CITRAS.

Bismuth Citrate.

1. Containing Bismuth Citrate [$BiC_6H_5O_7 = 397.04$] equivalent to not less than 55 percent, nor more than 59 percent of pure bismuth oxide.

2. Bismuth Subnitrate, one hundred grammes 100 gm.
Citric Acid, seventy-five grammes 75 gm.
Distilled Water, a sufficient quantity.

Mix the Bismuth Subnitrate and the Citric Acid with 400 cc., *four hundred cubic centimeters* of Distilled Water, and heat on a bath of boiling water, with frequent stirring, until a drop of the mixture yields a clear solution with ammonia water. Then add *five hundred cubic centimeters* of Distilled Water, allow the suspended matter to deposit, wash the precipitate, first by decantation, and afterwards on a strainer, with Distilled Water, until the washings are tasteless, and dry the residue at a gentle heat.

3. A white, amorphous or micro-crystalline powder, odorless and tasteless. Insoluble in water or alcohol, but soluble in ammonia water, and in solutions of alkali citrates.

4. When strongly heated the salt chars, and, on ignition, leaves a more or less blackened residue having a yellow surface, and soluble in warm nitric acid. This solution, when dropped into a large excess of water, occasions a white turbidity.

5. A solution of 1 gm. of Bismuth Citrate in ammonia water, when treated with hydrogen sulphide in excess, yields a black precipitate.

6. Deprive the filtrate from the latter of the excess of hydrogen sulphide by heating it; a cooled portion of the liquid boiled with an excess of lime water, yields a white precipitate.

7. Mix 0.01 gm. of the salt with 1 cc. of water, add 5 cc. of sulphuric acid, cool the mixture and then carefully pour over it 5 cc. of ferrous sulphate T. S. without mixing; no red or brown zone should appear within 5 minutes (*nitrate*).

8. Ignite 3 gm. of the salt, dissolve the residue in just a sufficient quantity of warm nitric acid, and pour the solution into 100 cc. of distilled water; a white precipitate is produced. Separate the filtrate from this precipitate and evaporate it on a water-bath to 30 cc., again filter the liquid and divide the new filtrate into portions of 5 cc. each; these should respond to the tests for purity described under *Bismuthi Subcarbonas* (See U. S. P. IX), (*lead, copper, silver* and sulphates).

9. Three gm. of Bismuth Citrate, after ignition and treatment with nitric acid as di-

rected in the following test, should not respond to the Bettendorf's Test for *arsenic* as stated in the U. S. P.

10. Ignite 1 gm. of Bismuth Citrate thoroughly, in a porcelain crucible, and, after cooling, add 5 cc. of nitric acid to the residue, drop by drop, warming until complete solution is effected, then evaporate to dryness, and again ignite it; a residue of bismuth oxide should be left weighing not less than 0.56 gm., nor more than 0.58 gm.

11. *Average dose.* — 0.125 gm.=125 milligrammes (2 grains).

BRAYERA.

Brayera. Cusso. Kousso.

1. The dried panicles of the pistillate flowers of *Hagenia Abyssinica* (Bruce) Gmelin (Fam. *Rosaceae*).

2. In rolls or flattened bundles from 25 to 40 cm. long, reddish-brown, each branch arising from the axil of a sheathing bract, and two rounded bracts at the base of each flower; calyx-tube top-shaped, pubescent, and subtended by a circle of five rigid, spreading, obovate, purple-veined bracts, which are larger than the five usually shrivelled and incurved calyx lobes; petals five, caducous and usually absent in the drug; carpels two; styles exserted, stigmas broad and hairy; odor slight; taste bitter.

3. The large stems should be rejected.

4. *Average dose.*—16 gm. (240 grains).

BROMUM.

Bromine.

1. It should contain not less than 97 percent of Bromine Br=79.92, and not more than 3 percent of chlorine. Bromine should be kept in glass-stoppered bottles in a cool place, the bottle being enclosed in a larger vessel with the space between filled with some compound capable of absorbing and combining with any Bromine vapors which might be given off.

Bromine is a heavy, dark brownish-red, mobile liquid, evolving, even at ordinary temperatures, reddish fumes, highly irritating to the eyes and lungs, and having a peculiar, suffocating odor, resembling that of chlorine.

3. Specific gravity: About 3.016 at 25° C. Boiling point, about 63° C.

4. Bromine is soluble in water, and freely soluble in alcohol, ether, chloroform and carbon disulphide.

5. On exposure to air or to heat, it is volatilized.

6. Bromine destroys the color of solutions of litmus and indigo, and imparts a yellow color to starch T. S.

7. On adding 5 cc. of Bromine to an excess of potassium hydroxide T. S., it should combine to form a permanently clear liquid, without the separation of oily drops (*organic bromine compounds*).

8. On shaking 10 cc. of a saturated aqueous solution of Bromine with a slight excess of reduced iron until it becomes nearly colorless, the filtered liquid, on the addition of 5 drops of ferric chloride T. S. and of 5 drops of starch T. S., should not assume a blue color (*iodine*).

9. Dissolve 10 gm. of potassium iodide in 25 cc. of distilled water, introduce the solution into a 100 cc. glass-stoppered graduated flask and determine accurately the weight of the flask and its contents. Add about 1 gm. of Bromine to the contents of the flask and determine its exact weight by noting the increase over the previous weighing and then fill the flask to the mark with distilled water. The titration of 25 cc. of this solution with tenth-normal sodium thiosulphate V. S., using starch T. S. as indicator and the calculation to the amount of Bromine originally taken, should show not less than 97 percent of Bromine (with not more than 3 percent of chlorine). Each cubic centimeter of tenth-normal sodium thiosulphate V. S. used corresponds to 0.007992 gm. of Bromine (Br) and 0.003546 gm. of Chlorine (Cl).

Each gramme of Bromine, U. S. P., (containing not more than 3 percent of chlorine) corresponds to not more than 129.831 cc. of tenth-normal sodium thiosulphate V. S.

CALCII PHOSPHAS PRÆCIPITATUS.

Precipitated Calcium Phosphate.

1. It should contain, when dried to constant weight, not less than 96 percent of Calcium Phosphate, $Ca_3(PO_4)_2$=310.29.

2. Precipitated Calcium Phosphate occurs as a white, amorphous or micro-crystalline, bulky powder, odorless and tasteless; permanent in the air. At an intense, white heat, the salt fuses without decomposition.

3. Almost insoluble in cold water; partly decomposed by boiling water, which dissolves out the acid salt; almost insoluble in acetic acid, except when freshly precipitated; easily dissolved by hydrochloric or nitric acid; insoluble in alcohol.

4. When moistened with silver nitrate T. S., either before or after ignition, the salt

acquires a yellow color (distinction from *acid calcium phosphate*, which, after ignition, when moistened with silver nitrate T. S., remains white).

5. For applying tests of identity and of purity, shake 2 gm. of precipitated Calcium Phosphate with 20 cc. of distilled water, add nitric acid, drop by drop until solution is effected, and then add sufficient water to make the liquid measure 40 cc. While making this solution, no effervescence should occur on adding the acid (carbonate).

6. From a portion of this solution the salt is precipitated unchanged by a slight excess of ammonia water. Silver nitrate T. S. added in excess to this mixture and then acetic acid, drop by drop, until the excess of ammonia is neutralized, will cause the color of the precipitate to change from white to yellow.

7. From another portion ammonium molybdate T. S. precipitates yellow ammonium phosphomolybdate; the reaction is accelerated by a gentle heat, not exceeding 65° C.

8. Five cc. of the solution, acidulated with nitric acid to which 0.5 cc. of silver nitrate T. S. is added should result in the production of not more than a slight turbidity (chloride).

9. Five cc. of the solution, strongly acidulated with nitric acid, to which 1 cc. of potassium sulphate T. S. is added, should not result in turbidity upon standing 15 minutes, (*barium*).

10. An aqueous solution of Calcium Phosphate (1 in 20) obtained by shaking the salt with distilled water, adding hydrochloric acid, drop by drop, and heating until solution is effected, should not respond to the U. S. P. Time-Limit Test for *heavy metals*.

11. Five cc. of a solution of Calcium Phosphate, in diluted hydrochloric acid (1 in 25) should not respond to the U. S. P. Test for *arsenic*.

12. *Average dose.*—1 gm. (15 grains).

CALENDULA.

Calendula

1. The dried ligulate florets of *Calendula officinalis* Linné (Fam. *Compositae*).

2. Florets, 15 to 25 mm. long, yellow or orange-colored, one- to three-toothed, the short hairy tube occasionally enclosing the remnants of a filiform style and bifid stigma; odor slight, somewhat heavy; taste slightly bitter, faintly saline.

3. *Average dose.*—1 gm. (15 grains).

CASSIA FISTULA.

Cassia Fistula.

1. The dried fruit of *Cathartocarpus fistula* Persoon (Fam. *Leguminosae*).

2. Cylindrical, 25 to 50 cm. long, about 20 mm. in diameter, chestnut-brown in color, on one side a longitudinal groove and on the other a smooth line or slight ridge, indicating the sutures; indehiscent, the cavity divided transversely into numerous compartments, each containing a reddish-brown, glossy, flattish-ovoid seed embedded in a blackish-brown sweet pulp; odor resembling that of prunes.

3. *Average dose.*—4 gm. (60 grains).

CATARIA.

Cataria. Catmint. Catnep.

1. The dried leaves and flowering tops of *Nepeta cataria* Linné (Fam. *Labiatae*).

2. Tops, when whole, 10 to 20 cm. in length, much branched, commonly crushed and broken; stems quadrangular, downy; leaves opposite, those of the stem petiolate 2 to 7 cm. long, rounded heart-shaped at the base, oblong, pointed at the apex, pale gray-green, soft hairy above, downy beneath, margin deeply crenate, floral leaves small, bract like; flowers in dense, interrupted spikes; flower small, calyx hairy, tubular, curved obliquely and equally 5 toothed, corolla whitish, dotted with purple, throat dilated, bilabiate, the upper lip erect, 2 cleft, leaves spreading, 3 cleft, the middle lobe largest, sometimes notched; stamens 2 pairs ascending under the upper lip, lower pair shorter. Odor faintly aromatic and mint-like; taste bitter, pungent, aromatic.

It should yield not more than 16 percent of ash.

CHIMAPHILA.

Chimaphila Pipsissewa.

1. The dried leaves of *Chimaphila umbellata* (Linné) Nuttall (Fam. *Ericaceae*), with not more than 5 percent of stem or other foreign substances.

2. Oblanceolate, 2.5 to 5 cm. long, 8 to 18 mm. broad, the upper portion coarsely and sharply serrate, acute or somewhat obtuse, the lower wedge-shaped and nearly entire; coriaceous, smooth and uniformly dark green on the upper surface, paler beneath, the veins being very prominent; odor slight; taste astringent and bitter.

3. *Average dose.*—2 gm. (30 grains).

(to be continued)

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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REPRINTS.

If the request is made at the time copy is submitted, authors will be furnished with not to exceed 50 reprints, without cover, of papers accepted for publication in the JOURNAL.

Larger numbers of reprints will be supplied by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

100 copies, 4 pages, no cover, $2.50, with cover, $4.50.
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Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

PAPERS FOR THE ISSUES OF JUNE, JULY, AUGUST, AND SEPTEMBER.

As the papers that were read at the Detroit meeting of the American Pharmaceutical Association have nearly all been printed, the editor requests that contributions for the succeeding numbers of the Journal be submitted. It is not desired to interfere with the work of the Sections and doubtless papers read at the Branch meetings will contribute largely to our present needs.

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POISONS AND HABIT-FORMING DRUGS.

A digest of laws and regulations relating to the possession, use, sale and manufacture of poisons and habit-forming drugs enacted during 1913 and 1914, now in force in the United States. By Martin I. Wilbert, Technical Assistant, Hygienic Laboratory, United States Public Health Service. Reprint No. 240 from the Public Health Reports, Washington, Government Printing Office, 1915.

This pamphlet of 100 pages is designed as a second supplement to Public Health Bulletin No. 56, a Digest of Laws and Regulations Relating to Poisons and Habit-Forming Drugs, published by the Public Health Service in 1912. This second supplement presents a compilation of the laws and regulations enacted in thirty-two of the political divisions of the United States during 1913 and 1914 that are not included in either of the earlier publications. The extracts from and the references to these several laws and regulations have been arranged under the following headings: "Sale and Use of Poisons," "Sale and Use of Cocaine and Narcotics," "Drugs to be Announced on Label," "Poisons in Articles of Commerce," "Occupational Intoxications," "Methyl Alcohol," "Sale and Use of Intoxicating Liquors," "Practice of Pharmacy," and "Standards for Drugs."

The introductory portion, including 16 pages, reviews some of the current activities and presents a number of tables giving interesting data regarding the use and abuse of poisons and habit-forming drugs.

In discussing the sale and use of intoxicating liquors the suggestion is made that retail druggists might take advantage of the precedent established under the provisions of the Federal anti-narcotic law and secure legislation providing for a special license for the sale of alcohol for medicinal and mechanical

purposes. By extending the principle of registration and record embodied in the Federal anti-narcotic law to cover alcohol and alcohol containing medicines, it would be possible to differentiate between dealers in alcohol and alcoholic liquids for medicinal purposes and dealers who sell alcoholic liquids for beverage purposes. Such a provision could be made to furnish the necessary information to make prohibition and local option laws more effective, would practically preclude the sale of alcohol for beverage purposes under the guise of medicine and thus afford to officials in prohibition or local option territory an opportunity to enforce restrictive legislation in a way hitherto impossible. A distinct form of license with provisions to restrict the sale of alcohol to strictly legitimate channels would also serve to remove from pharmacists the suspicion of selling alcoholic liquids for beverage purposes and thus tend to re-establish the respect due to all honest members of our profession. To pharmacists who are interested in the promulgation of restrictive legislation this compilation of laws and regulations will be particularly interesting and useful. To the extent of the edition, the reprint may be had on application to the Surgeon General of the United States Public Health Service, and additional copies may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at ten cents a copy.

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Elementary Practical Chemistry, by J. E. Myers and J. B. Firth. The book is designed for medical students preparing for their first examination in practical chemistry. The authors say that the syllabuses of most of the medical examining bodies of the British Isles have been carefully considered, with a view of including herein all information necessary to meet their requirements.

The book is divided into four parts, as follows: (1) General Methods of Chemical Manipulation; (2) Inorganic Qualitative Analysis; (3) Inorganic Quantitative Analysis, including examples in both gravimetric and volumetric work; (4) Practical Organic Chemistry.

The authors have been very successful in condensing the various branches of chemistry in such a small volume, including at the same time most essential laboratory exercises. A purpose seems to have been to explain simple apparatus, and the chemicals have been selected with thought for cost and in smallest amounts. The explanations and directions are plainly stated. The little book conforms to the claims of the authors. J. B. Lippincott Company are the American publishers, representing Charles Griffin & Co. of London.

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Honorary President Geo. H. Schafer directs our attention to the following statement in the Chicago Tribune by Dr. W. A. Evans: "The Pharmaceutical Journal quotes a druggist as saying that for every ounce of laudanum dispensed on prescriptions, he sells at least a gallon to self-dopers. He says that this is the rule among drug stores." The reference is indefinite, the last clause is not only false but manifestly unjust. Charges of this kind should not go unchallenged. Dr. Evans and the Tribune should have considered the statement in connection with the efforts put forth by pharmacists to regulate the dispensing of narcotics.

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General Secretary William B. Day attended the banquet of the Pharmacy Department of Purdue University, Lafayette, Ind., May 6th. Aside from an enjoyable occasion, the Secretary found that a number of applications for membership in the American Pharmaceutical Association awaited him.

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L. C. Gill, formerly of Texas, now representing William R. Warner & Co. in Panama, has sent in his application for membership in the American Pharmaceutical Association.

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Bolivar Jurado, Professor of Chemistry and Physics in the National Institute of Panama, has been appointed Municipal Chemist for the City and District of Panama. Professor Jurado joined the Association four years ago; he has the possibility in mind that a Branch may be formed on the Isthmus.

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Every day I am more sure of the mistake made by good people universally in trying to pull fallen people up instead of keeping the yet safe ones from tumbling after them; and in always spending their pains on the worst instead of the best material.—Ruskin.

The Bulletin Board

NATIONAL COMMITTEE ON THE PHARMACEUTICAL SYLLABUS.

BULLETIN III.

A report on the affairs of the Committee to date.

In the treasurer's report made in August at Detroit and of which copies were sent to members of the committee on October 20, 1914, there appeared a balance of $246.95 due the printers, and a balance of $115.82 due Dr. Taylor for cash advanced. These debts were more than balanced by the value of the 426 copies of the Syllabus on hand and of the plates for printing the Syllabus. Dr. Taylor has requested that the balance due the printers be paid first.

The three parent organizations have sent the usual annual contribution of $25 each, and with these and receipts from the sale of the Syllabus $150 have been paid to the printers on account, leaving an unpaid balance of $92.95. It is estimated that all debts can be paid before the end of 1915.

A circular letter advertising the Syllabus was sent on December 1, 1914 to members of Pharmacy Boards and College Faculties throughout the United States. This resulted in the sale of about 50 copies. Some members of the Committee have sold 60 or more copies to their students in Colleges of Pharmacy. There are about 300 copies in stock, enough to last for a year or more, unless there is an unexpectedly large sale for them.

The storage and insurance of the plates for printing the Syllabus was referred to the Executive Committee with power. The Committee has had them transferred to the New York Education Building and insured at a total cost of $2.00 for the insurance.

Harry B. Mason, John Culley and Julius A. Koch have been reappointed to the Committee by the A. Ph. A., the N. A. B. P. and the A. C. P. F., respectively. Ernst O. Engstrom, of Pittsfield, Mass., Clarence O. Bigelow, of New York, and Turner A. Miller, of Richmond, Va., have resigned from the Committee, and the N. A. B. P. has appointed John W. Gayle, George C. Diekman and Mason C. Beebe in their respective places.

The Committee now has the following membership:

FROM THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Term Expires	
1915	George M. Beringer, Camden, N. J.
1916	William B. Day, 74 East 12th St., Chicago, Ill.
1917	Willis G. Gregory, Buffalo, N. Y., 344 Richmond Ave.
1918	Henry L. Taylor, Albany, N. Y., 2 Woodlawn Ave.
1919	Charles Caspari, Jr., Baltimore, Md., University of Maryland.
1920	Eugene G. Eberle, Dallas, Texas, P. O. Box 1539.
1921	Harry B. Mason, Detroit, Mich., P. O. Box 484.

FROM THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

1915	Charles Gietner, St. Louis, Mo., 203 South Broadway.
1916	William Mittelbach, Booneville, Mo.
1917	John W. Gayle, Frankfort, Ky., Ann St. and Broadway.
1918	William H. Rudder, Salem, Ind.
1919	George, C. Diekman, New York City, 115 West 68th St.
1920	Mason C. Beebe, Burlington, Vt., 75 Church St.
1921	John Culley, Ogden, Utah, 2479 Washington Ave.

FROM THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

1915	Theodore J. Bradley, Boston, Mass., 70 St. Botolph St.
1916	Henry H. Rusby, Newark, N. J., 776 De Graw Ave.
1917	James H. Beal, Urbana Ill., 801 W. Nevada St.
1918	Charles W. Johnson, Seattle, Wash., College of Pharmacy, University of Washington.
1919	Clement B. Lowe, Philadelphia, Pa., 6630 Germantown Ave.
1920	William C. Anderson, Brooklyn, N. Y., 315 Greene Ave.
1921	Julius A. Koch, Pittsburgh Pa., Bluff and Pride Sts.

The sub-committees now have the following membership:

MATERIA MEDICA.

Henry H. Rusby, *Chairman*, Mason C. Beebe, George M. Beringer, John Culley, William B. Day, Clement B. Lowe, and William Mittelbach.

CHEMISTRY.

Julius A. Koch, *Chairman*, William C. Anderson, Theodore J. Bradley, George C. Diekman, John W. Gayle, Charles W. Johnson, Henry L. Taylor.

PHARMACY.

James H. Beal, *Chairman*, Charles Caspari, Jr., Engene G. Eberle, Charles Gietner, Willis G. Gregory, Harry B. Mason, William H. Rudder.

Corrections of any errors in the above lists should be sent to the Secretary at once as the lists will soon be printed.

WILLIS G. GREGORY, Chairman.
THEODORE J. BRADLEY, Secretary-Treasurer.

SECTION ON EDUCATION AND LEGISLATION.

Partial list of topics upon which papers are desired to be read at the San Francisco A. Ph. A. meeting under the auspices of the Section on Education and Legislation:

First—Prescription pricing. Is it desirable to consider a revision of the present method for pricing medicines sold upon prescription? Is it advisable to discuss this subject with medical societies with a view of overcoming the evil of dispensing by physicians?

Second—How can the individual druggist be helpful to bring about a correct public understanding of the druggist in his relationship to the public?

Third—Should Pharmaceutical Ethics be taught in a separate course, or can needs in this respect be fully served by teaching them incidentally?

Fourth—What special methods may be adopted by teachers in Colleges of Pharmacy to secure the best work from students without examinations?

Fifth—How can the druggist be helpful to assist the boards of health in educating the public regarding sanitation and the proper care of contagious diseases?

Sixth—Proprietary and Patent Medicines. Is it just to require publication of complete formula? Is the public welfare served by requiring publication, only, of potent drug content, and how in such case should potent drug content be defined?

Seventh—Teachers in Colleges of Pharmacy. Can the fitness of those who desire to teach in Colleges of Pharmacy be determined without regulation? Should there be a standard educational requirement for teachers in Colleges of Pharmacy?

Eighth—Can lack of preliminary education be overcome by supplementing the regular courses in Colleges of Pharmacy with such general educational courses as will most properly fit the student?

Ninth—Is the public welfare properly safeguarded by allowing the prescribing and distribution of medicines without record of some sort open to possible inspection by third persons and by the authorities?

Tenth—What general plan can be adopted to retain or to again establish a condition which will offer sufficient opportunity for the skilled pharmacist?

Eleventh—To what extent should Pharmacology be taught in Schools of Pharmacy?

Twelfth—Uniform marking systems and methods of grading work done by students in Schools of Pharmacy.

Thirteenth—How much time of a Pharmacy Curriculum should be devoted to Bacteriology?

Fourteenth—To what extent should Toxicology be taught in Schools of Pharmacy?

Fifteenth—How much time should be devoted to the study of Pharmacognosy?

Sixteenth—In what course and by what methods are drugs of the Organic Chemistry Laboratory best taught in Pharmaceutical Schools?

Seventeenth—Complete and detailed outlines of courses of study dealing only with Prescription Work.

Eighteenth—Should a library reading course be made a part of the curriculum of Schools of Pharmacy?

Many of the above topics, while not entirely new, should be timely and of deep interest to the teaching members of the Secton. Papers are, therefore, especially solicited from those engaged in the teaching of the various subjects mentioned. It should be remembered that, according to an established custom, the time required for the reading of a paper should not be more than fifteen minutes.

Additional subjects are solicited.

Papers should be in the hands of the Chairman or Secretary of the Section not later than the first of August.

R. A. KUEVER, Secretary.

Iowa City, Iowa.

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THE MODERN PHARMACY LAW.

The work of drafting a Modern Pharmacy Law by the Section on Education and Legislation of the American Pharmaceutical Association is progressing splendidly. Chairman Freericks has been able to secure appointments from forty-three state Pharmaceutical Associations and forty-three state Boards of Pharmacy. In other words, forty-three states have appointed subcommittees of two, one from the examining board and one from the state association, to co-operate in the work of drafting a Modern Pharmacy Law. These various subcommittees together in one body are known as the Voluntary Conference of the Section on Education and Legislation—each man having signified his willingness to serve and his interest in the work.

MEMBERS OF THE VOLUNTARY CONFERENCE.

Appointees of the State Boards.

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T. L. McCutchen, Yuma, Ariz.
Frank Schachleiter, Hot Springs, Ark.
Frank E. Mortenson, care Dundee Pharmacy, Pueblo, Colo.
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Warren L. Bradt, Albany, N. Y.
W. W. Horne, Fayetteville, N. C.
H. L. Haussamen, Grafton, N. D.
Edward Voss, Jr., 12th and Vine Sts., Cincinnati, O.
J. C. Burton, Stroud, Okla.
J. Lee Brown, Marshfield, Ore.
Lucius L. Walton, Williamsport, Pa.
Howard A. Pearce, 370 Elmwood Ave., Providence, R. I.
H. E. Heinitsh, Ph. G., Spartanburg, S. C.
F. W. Halbkat, Webster, S. Dak.
O. J. Nance, Jackson, Tenn.
W. H. Cousins, Dallas, Tex.
John Culley, Ogden, Utah.
Wilfred Root, Brattleboro, Vt.
W. L. Lyle, Bedford, Va.
D. R. Garrison, Connell, Wash.
Alfred Walker, Sutton, W. Va.
Edward Williams, Madison, Wis.

Appointees of the State Pharmaceutical Associations.

L L. Scarborough, Anniston, Ala.
Thos. E. Thorpe, 910 E. Willeta St., Phoenix, Ariz.
A. L. Morgan, Camden, Ark.
D. R. Rees, 601 Laguna St., San Francisco, Cal.
S. M. Aller, South Norwalk, Conn.
W. S. Richardson, 316 4½ St. S. W., Washington, D. C.
W. D. Jones, 107 E. Bay St., Jacksonville, Fla.
Herman Shuptrine, 229 Congress St., Savannah, Ga.
Rosco W. Smith, Mt. Home, Idaho.
Prof. C. M. Snow, Michigan Blvd. and 12th St., Chicago, Ill.
A. F. Sala, Winchester, Ind.
Geo. D. Newcombe, Creston, Ia.
C. C. Reed, Salina, Kansas.
Robt. J. Frick, S. E. Cor. 7th and Main, Louisville, Ky.
Jos. W. Peyton, 500 Texas St., Shreveport, La.
Jas. E. Hancock, 4 S. H. Ward St., Baltimore, Md.
Ernest O. Engstrom, 251 Wright's Block, Pittsfield, Mass.
John H. Webster, 933 Lafayette Ave., Detroit, Mich.
Charles H. Huhn, 98 Western Ave., Minneapolis, Minn.
A. S. Coody, Lucedale, Miss.
Prof. Francis Hemm, 3854a Arsenal St., St. Louis, Mo.
J. A. Riedel, Boulder, Mont.
Charles R. Sherman, 16th and Dodge, Omaha, Neb.
H. J. Duncan, Reno, Nevada.
Wm. C. Anderson, 277 Grand Ave., Brooklyn, N. Y.
L. W. McKesson, Statesville, N. C.
W. S. Parker, Lisbon, N. Dak.
Waldo M. Bowman, 319 Superior St., Toledo, Ohio.
A. W. Woodmancy, Oklahoma City, Okla.
S. C. Henry, 508 S. 61st St., Philadelphia, Pa.
Jas. O'Hare, 4 Benefit St., Providence, R. I.
F. M. Ellerbe, Ph. G., Jonesville, S. C.
D. F. Jones, Watertown, S. Dak.
Sam P. Harbin, Richardson, Tex.
Jas. L. Franken, 44 "J" St., Salt Lake City, Utah.

W. P. Warner, Vergennes, Vt.
Walter G. Williams, Charlotte Court House, Va.
Charles W. Johnson, care University of Washington, Seattle, Wash.
Walter E. Dittmeyer, Harper's Ferry, W. Va.
Edw. Kremers, University of Wisconsin, Madison, Wis.
Edwin C. Bean, Belmont, N. H.
Geo. M. Beringer, 5th and Federal Sts., Camden, N. J.
G. S. Moore, Roswell, New Mexico.

The Section on Education and Legislation has been very fortunate in securing for its Voluntary Conference not only pharmacists of the very highest type but men who are thoroughly qualified and have a great deal of interest in legislative work. The personnel of the Conference insures in a measure the success of the drafting of the Modern Pharmacy Law.

Chairman Freericks announces that there has been some delay purposely in this work in order that legislative work in the various states might not conflict. But now, with that mostly out of the way, the work of making the first draft of the Modern Pharmacy Law is to proceed as rapidly as possible. The Chairman suggests that representatives of the Board of Pharmacy and of the State Association get together, wherever possible, to agree upon what they deem advisable in the way of changes in their state laws. In states where the reprsentatives are not in close proximity to each other or are unable to get together for other reasons, a separate copy of their present law, with such notation of changes as they deem advisable, should be sent individually. Moreover, Chairman Freericks has requested that these various state laws with suggestions are to be sent in by the first of May since the sifting and compiling and reconciling of all suggestions for changes for improvements will be a difficult and tedious task.

To facilitate matters each member of the Voluntary Conference has been asked for an expression of his opinion regarding the advisability of embodying in the draft of the Modern Pharmacy Law provisions which will cover in some manner the following special features:

First.—Is it deemed advisable that the Modern Pharmacy Law should contain a provision which would require the manufacturer of proprietary medicines to show on the label, the contents of potent drugs? This does not mean to require publication of formula, but simply means the publication of potent drug contents. And in such case how can potent drug contents be best defined?

Second.—Is it deemed possible to restrict the sale of proprietary medicines containing potent drugs to qualified people exclusively, or at least in all places where there are such qualified people within a certain distance? In such case what should be the distance prescribed from where qualified people are located, so as to permit beyond such distance the sale by unqualified people?

Third.—Should the manufacturer of proprietary medicines be required to have a registered pharmacist in charge, or should he, at least, be required to become licensed by the Board of Pharmacy for the manufacture of his proprietary medicines?

Fourth.—In view of the great difference of opinion which exists in different sections of the country regarding college graduation as a prerequisite for registration as pharmacists, is it possible to reconcile the strongly opposing views, so that in some manner progress might be secured in every state without coming in conflict with the opinion of those who do not favor the college prerequisite? To make this thought clear, take for instance the states in which college education is not today a prerequisite for registration as pharmacist, would it be feasible to allow such condition to continue without interference, and then in such states create an additional class to whom the college prerequisite would apply, as for instance to give such class the name "Registered Pharmaceutical Chemist"? Such Pharmaceutical Chemists would have the right to exercise all of the present-day functions of the Registered Pharmacist, and some additional functions which might subsequently be decided on, which in no manner would interfere with the privileges and prerogatives of the present-day Registered Pharmacist. Members of the Conference who are opposed to the prerequisite are respectfully asked not to become impatient with this suggestion immediately, but to please give it thorough consideration. It would seem that this would open the way for young men in every state to so qualify themselves under the laws of their state, so as to later on, if conditions made it necessary, be able to go into any and every state and become there registered as a Pharmacist. At the same time such inauguration

of a third class in states where the prerequisite for pharmacists is not desired, would gradually have a tendency to improve conditions in that respect, and yet not to the extent of conflicting with the views of those who are today opposed to the prerequisite.

Fifth.—Should there be a provision to govern those who would be privileged to act as teachers and instructors in Colleges of Pharmacy? Today it seems that most anyone may teach pharmacy, and its allied subjects, the measure of fitness being left with the person who would teach. The thought has been expressed, that those who would teach should in some manner be required to first prove their qualification.

Sixth.—Should the law prescribe requirements for Colleges of Pharmacy which they would need to meet in order to be recognized by Boards of Pharmacy?

Seventh.—Should the law require all who would dispense medicines to make and keep a record of medicines so dispensed? For instance, third persons can know only what medicines have been given to a patient, when the medicines have been secured from a pharmacist on a physician's prescription. When the physician dispenses his own medicines to his patients, it is altogether impossible for third persons to know what such medicines may have been. It seems in keeping with the public welfare that there should be opportunity in every case to know what medicines may have been given to a patient. The question is, therefore, whether it be deemed advisable that when physicians dispense their own medicines, they be required to make a record of such dispensing.

R. A. KUEVER, Secretary.

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MEDICINE PIPET HOLDER.

Various holders and bottle attachments for medicine pipets have been devised, but are seldom available when needed.



An efficient holder can be improvised in about ten seconds' time by the use of two common brass pins. The pins are inserted deeply into the cork, parallel with each other and nearly in contact. They will possess spring enough to hold securely an ordinary medicine pipet as shown in the accompanying illustration.—Dr. H. S. Reynolds, New Haven, Conn., in Journal A. M. A.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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PHILADELPHIA.

FEBRUARY REVIEW OF PHARMACEUTICAL LITERATURE.

It is apparent from a survey of the pharmaceutical journals published during the month of February that original work along pharmaceutical lines has been confined chiefly to researches in pharmaceutical chemistry and botany.

The greater part of the literature published during the month is devoted to drug store business problems and other articles of general interest, either copied or original.

The following abstracts are from original articles appearing in the February issues of the publications mentioned.

Journal of the American Chemical Society.

G. A. Linhart (page 258) separates mercuric chloride from benzene quantitatively by shaking out the benzene solution with a solution of sodium chloride and precipitating the $HgCl_2$ from the latter with hydrogen sulphide. This method is stated to be well adapted for quantitative work.

Curtman and Wikoff (page 298), in a paper on "The Detection of Bromides in Presence of Thiocyanates, Cyanides and Ferrocyanides" point out that the presence of the latter substances interferes in the detection of bromides by the ordinary methods, and that from their experiments it is evident that thiocyanates offer the greatest and ferrocyanides the least interference.

A rapid method, taking about 15 minutes, and showing trustworthy results is given,

whereby 2 mgm. of bromine can be detected in presence of 500 mgm. of each of the interfering substances. In the method proposed the interfering substances are precipitated in the form of their cuprous salts by first treating the solution containing them with a saturated solution of SO_2 and then with double normal $CuSO_4$ in excess. The precipitate is separated by filtration and the filtrate is boiled to remove excess of SO_2 and then treated with triple normal H_2SO_4 and 1% $KMnO_4$. Carbon disulphide is added and by shaking out, the presence of Bromine is established.

Another paper of pharmaceutical interest in this issue (page 323), but too lengthy and technical for short abstracting is the one on "Chlorohyll," by Richard Willstätter.

Isolation of chlorphyll and separation into its components; the carotinoids, comparative investigation of leaf pigments and the question of chemical constitution of chlorophyll are considered.

Journal of Industrial and Engineering Chemistry.

Satow (page 113) has isolated an insoluble, naturally yellow, mordant coloring matter said to be identical with "myricetin," from the bark of myrica rubra, and by converting this substance into azo, sulfide and nitro compounds was able to produce other useful soluble dyestuffs.

Journal American Pharmaceutical Association.

The papers and proceedings of the section on practical pharmacy appearing in the current issue are all worthy of attention. In a contribution entitled, "The Relation of Pharmacy to Medicine," A. H. Dewey makes the following interesting distinction between the commercial pharmacist and the professional pharmacist.

"The Commercial pharmacist practices a kind of pharmacy which is wholly independent of the medical profession, while the professional pharmacist practices a kind of pharmacy which is wholly dependent upon the medical profession."

American Journal of Pharmacy.

The article on natural and synthetic camphor by Percy A. Houseman is very interesting. The author calls attention to the commercial importance of natural camphor to the producing countries, and then takes up its extraction and refining, properties, uses and chemical constitution. Synthetic camphor manufacture is also discussed and the author believes the future of this industry to be quite uncertain, due to the fluctuation in the price of natural camphor and the variation in price and supply of turpentine.

In a paper on Arsenic antidote, by J. W. England, attention is called to the importance of the suggestion for using magma magnesia N. F. in place of magnesium oxide in the preparation of the official arsenic antidote.

Western Druggist.

A practical paper in this issue (page 34) is the one by P. J. Jacobs entitled, "Preparing a Proof of Loss by Fire," in which attention is called to the importance of druggists being prepared to face loss by fire and having all the necessary information tabulated when claiming insurance. A hypothetical case is used for purposes of illustration, and all necessary figures are given.

Practical Druggist.

Walker and Klein (page 27) describe a test which aids the diagnosis of cancer and sarcoma. The urine of the patient is treated with tenth-normal iodine solution and HCl, and the color obtained is compared with a previously-prepared standard. A marked difference in color from that of the standard is said to indicate an advanced state of the disease, while slighter color variations indicate incipiency or less advanced stages.

Bulletin of Pharmacy.

An interesting contribution to historical pharmacy may be found on page 68, under the title, "What the Drug Business has Come From."

Prescription pricing is the title of a paper found on page 80, and presents the views of several druggists on the prices that are and should be received for medicines by the retailer.

National Druggist.

An editorial on "The Ownership of the Prescription" states that "the right to possess it lies consecutively with the individuals in whose hands it reposes at the various stages of its career." This would seem to make the pharmacist the final and permanent possessor of the prescription.

Some good suggestions, which are also

timely, are contained in the article on "Easter Trade," by Edgar L. Mills (page 50).

Spatula.

"Pharmacy in Europe" is the title of an interesting story describing a traveler's experiences in the pharmacies of England, Holland, Sweden, Norway, Denmark, Germany, Belgium, France, and Italy.

Pharmaceutical Era.

Felix J. Koch (page 57) discusses in detail the sources and cultivation of our saffron supply and the government investigations with regard to its adulteration.

Chemist and Druggist.

Pharmacists' activities in the European war are receiving considerable attention in the pharmaceutical journals of the various belligerent nations.

It is significant to note that few serious epidemics are reported. The Chemist and Druggist (page 258) reports that the word Aspirin has been removed from the British Trade-marks Register, so that anyone may use this name.

The various local associations are discussing the revision of the British Pharmacopœia and many adverse criticisms are being made. English pharmacists, speaking generally, are not satisfied with the revision and the dissatisfaction is partly explained by the fact that pharmacists have had no part, officially, in the revision.

An interesting brief (page 201) regarding antimony brings out that there is ground for believing that a good deal of the metal contracted for shipment to the U. S. from Europe will not be shipped, owing to the present scarcity.

Canadian Pharmaceutical Journals are protesting against the war tax on proprietaries which has recently been levied by the Canadian government.

The Canadian Pharmaceutical Journal, in commenting on the tax says, "Why tax the baby's cough syrup and pass over the young man's favorite brand of chocolates?"

The tax according to this journal is from 10 to 12% specific, taking away practically the entire retail profit on patent medicines.

American Druggist.

An article by Wilhelm Bodemann (page 48) and editorial comment sound a note of warning against making graduation from a high school a pre-requisite for entrance to colleges of pharmacy and ultimate registration. An article (page 52) describing methods of collecting outstanding accounts and including a set of letters used for requesting payment without hurting the feelings of the debtor should be of considerable interest to the retailer who has a credit business.

Midland Druggist.

An editorial (page 47) on "Accuracy in Pharmaceutical Spelling" criticises board members and teachers for laxity in regard to spelling pharmaceutical names and urges preceptors to insist on proper spelling by their apprentices.

Merck's Report.

A paper on sugar cane by R. I. Geare (page 28) of Washington, D. C., takes up some of the requirements for the proper cultivation of this plant in the United States and emphasizes particularly the use of the proper kind of fertilizer to furnish potash, phosphates and nitrogen, which are essential to its successful growth.

The Druggists Circular.

Spurious Drugs (page 87) is the title of a paper by John Uri Lloyd, dealing with adulterants found in some crude drugs. The author takes the attitude that ignorance on the part of collectors and others is often responsible for the admixture of crude drugs having similar characteristics.

Proper instruction of those in charge of collecting drugs and remuneration corresponding to the responsibilties involved, are offered as suggestions for preventing this unintentional adulteration.

In conclusion, the author states that the American drug market presents a deplorable uncertainty that can be overcome only by the means just suggested and can be materially improved by employing experts to purify our native materia medica.

ROBERT P. FISCHELIS, B. Sc., PH. D.

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The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held on Tuesday evening, April 13, at the Medico-Chirurgical College. In the absence of the president and vice-president, Prof. C. H. LaWall was ap-

pointed chairman pro tem and he called the meeting to order at 8:30 p. m. The minutes of the last meeting were read and approved.

The committee, appointed at the March meeting to audit the treasurer's accounts, reported them to be correct.

Under the head of new business the following communication was read:

April 12, 1915.

Secretary Philadelphia Branch, A. Ph. A.:

Dear Sir—Inasmuch as the time which elapsed between sending the reply to the Pearson article, to the Council of the A. Ph. A., and its receipt from them, was so great, and taking into account the number of adverse comments which were received regarding it, I feel that it should be withdrawn and do so move, with the approval of the committee to whom was entrusted the task of drafting it. Very truly yours,

(Signed) C. H. LAWALL.

Mr. Apple moved that the reply to Pearson's Article—Pills and Piracy—be laid on the table. The motion carried.

The program of the evening was then taken up and Mr. Joseph Rosin read Dr. Rosengarten's paper on "The Standards and Tests for Organic Chemicals in the U. S. P. IX."

Mr. George M. Beringer gave a comprehensive survey of the new features of "The Extracts, Fluidextracts and Tinctures of the U. S. P. IX."

"The Current Review of Pharmaceutical Journals" was presented by Prof. E. Fullerton Cook, after which the meeting adjourned.

J. ED. BREWER, Secretary.

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CHICAGO.

The April meeting of the Chicago Branch of the American Pharmaceutical Association was held the evening of April 26 at the Kuntz-Remmler restaurant, following a complimentary dinner to Professor Joseph Price Remington. A large attendance was had.

James H. Wells reported for the legislative committee that the various bills before the Illinois Legislature amending the Pharmacy law were making some progress, but stated that, because of the greatly overcrowded condition of the legislative calendar, much pressure would have to be brought to bear to get a hearing and vote on the pharmacy amendments.

William Gray reporting for the Committee on Practical Pharmacy read a very interesting instructive paper on the preparation and use of Bang's Solution for the determination of sugar in urine. Mr. Irwin A. Becker also presented a valuable paper entitled, "Some Observations on the new British Pharmacopœia." Mr. Becker discussed at some length the test for free salicylic acid in aspirin on acetylsalicylic acid and by practical demonstration showed the inaccuracy of the test as stated in the British Pharmacopœia.

Charles Orr, employed as pharmacist by the Illinois Central Railroad Company, read a most interesting paper on "The Opportunities of a Pharmacist in Railway Hospital Work."

The three papers were well received and by motion were ordered presented to the Publication Committee of the Association for publication in the Journal, if desirable.

Professor Remington was enthusiastically received after a characteristic introduction from President Craig. Professor Remington presented various phases of the work in the new U. S. Pharmacopœia, especially the subjects of liquid petrolatum, whiskey, patented chemicals, adrenalin, etc. He exhibited the page proof of the first hundred pages of the new book and named October as the month in which he expected it to be on the market.

The discussion that followed was most instructive and the reminiscences most entertaining. Professor W. B. Day moved a vote of thanks and Mr. George P. Englehard offered a touching tribute to Professor Remington's character and his great gifts to pharmacy.

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BALTIMORE.

The April meeting of the Baltimore Branch of the American Pharmaceutical Association was held Wednesday evening, April 21, in the Hynson, Westcott & Company assembly room at Charles and Franklin Streets, with President E. W. Hodson in the Chair.

The regular program included:

Some Notes on Glucosides, by Dr. Herman Engelhardt.

Some Dispensary Observations, by Miss Carrie G. Mossop.

Little Journeys Through the Journals.

Doctor Engelhardt read a paper on the "Synthesis of Glucosides," which was very interesting and instructive and of considerable educational value.

By the vote of the branch it was referred to the Journal for publication as a paper

coming through the branch to the Association.

A brief synopsis follows:

SYNTHESIS OF GLUCOSIDES.

After discussing the properties of glucosides and the action of the enzymes in general, a few methods for isolating glucosides were given. The earlier work done by Schützenberger, Michael, Schiff and Fischer was discussed and finally the important work done by Bourquelot and his associates and pupils was reviewed.

Bourquelot's method for synthesizing the glucosides differs entirely from the methods applied by the above-mentioned investigators and depends on the fact that enzymes have the power not only to hydrolize glucosides, but also to reconstruct them from the products of hydrolysis. Some of the glucosides prepared syntheically by the last mentioned method were then discussed. Finally the great importance which the enzymes and glucosides have in biochemical synthesis was mentioned and also the importance of synthesis and hydrolysis for the life of the plants.

Miss Mossop read a paper on "Dispensary Observations," which she prefaced by remarking that Doctor Hynson once told us that the pharmacist is a kind of triangle, the three sides being professional, commercial and social, and that she had chosen one division of the social side and would endeavor to tell of some of her observations of human nature at the free dispensary.

Although her paper was not along the scientific or ethical lines indicated in the program, yet it certainly did indicate that she had absorbed and observed as she went along and that her experiences in her sociological work among the classes met with in dispensary patients, were well worth recording and reading.

They were very much enjoyed and they could be printed in the Journal to edify those of us who have not been introduced to this side of our calling.

Extremes in appearance were cited in which some endeavored to "put up as good a front" as possible, and others to appear extremely shabby, some men going to the trouble to remove collar and tie outside of the dispensary door and hide them in their pockets.

The dependence of the genus male of the Ethiopian clan on the "Female of the Species" is strikingly brought out there, as she invariably brings him and tells all of his troubles, he saying nothing unless asked or prompted by her.

The gratitude of some is shown in their kissing the hands of all who have served them, in bringing little presents of flowers and in many other touching ways.

Some are grafters and want something besides what is prescribed and sometimes will offer half the charge for a regular prescription to get it and occasionally, even more.

Some of the journals were considered and some of the articles were discussed.

A book on prescription writing, given as a premium by one of the pharmaceutical journals was introduced by Doctor Hynson as one containing horrible prescriptions and worse pharmacy.

During the discussion which followed, the necessity of education along the lines of pharmaceutical Latin was emphasized and the disparity between the "Dog Latin" of American pharmacy and American prescriptions and the good Latin of that of Europe was brought out.

The same difference was pointed out between the Latin of the prescriptions appearing in American pharmaceutical and American medical journals, although the Latin of the average prescription is awful.

The discussion resulted in a motion being carried that "It is the sense of the Branch that in an effort to improve the Latin of prescriptions, that the pharmaceutical journals should edit the prescriptions appearing in them."

In calling back to a physician, a prescription received over the telephone, it was felt that, unless the pharmacist knew his Latin, it would be best to repeat it in good English rather than in bad Latin.

WM. J. LOWRY, JR., Secretary.

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NEW YORK.

Minutes of the regular meeting of the New York Branch of the American Pharmaceutical Association held in the New York College of Pharmacy Building, March 8, 1915, President Roemer in the Chair.

Minutes of the preceding meeting were adopted as read.

Treasurer's Report: Read and received with thanks.

The member of the Council, Mr. McEl-

henie was not present and no report was received.

REPORTS OF COMMITTEES.

Membership: Chairman Rehfuss being absent no report was received.

Legislation and Education: Chairman Anderson presented a very detailed and interesting report concerning local, state and national legislative matters. Among other things he called attention to the ruling of the Commissioner of Internal Revenue that druggists must keep a record of narcotics used in manufacturing preparations, claiming that this was beyond the Commissioner's authority. Novocain is exempted from the provisions of the act.

Attention was directed toward the various bills introduced at Albany that have any bearing upon the drug-trade.

Fraternal Relations: Chairman Berger absent. No report.

Progress of Pharmacy: Chairman Dickman read an interesting report presenting numerous abstracts from various publications. Calmonal, a calcium-bromide-urethan compound is recommended as a hypnotic without narcotic effect. Durolit is a lacquer prepared according to a patented process and is said to resist hot solutions of alkalis. Normal opium is the name suggested for opium containing definite quantities of morphine, codeine, narcotine and meconic acid. Professor Kobert-Rostock states in the Phar. Zentralhalle that he considers artificial camphor free from poisonous properties. A long list of specialties were also included in the report.

A communication from Mr. C. A. Mayo was read requesting that the Branch send delegates to the N. Y. Pharmaceutical Conference and asking for financial support. The communication was received and motion carried that the president appoint three delegates.

A communication from President Roemer suggesting semi-monthly meetings was received and the secretary was ordered to embody the suggestion in the notices for the next meeting.

President Roemer presented for membership the name of S. Meyer of College Point, and he was duly declared elected

Several representatives from the Board of Health and the Bureau of Standards were present and a discussion of the "Standardization of Pharmaceutical Graduates" resulted in the president being empowered to appoint a committee to further consider the matter. The resolution follows:

Be it resolved, that the New York Branch of the American Pharmaceutical Association approves of the spirit of the suggested standardization of graduates as proposed by the Bureau of Standards of the New York Board of Estimate and Apportionment and that the president appoint a committee of three to discuss the matter with the representatives of the Bureau.

Dr. R. P. Fischelis then read a paper entitled, "A Plan for a More Serviceable A. Ph. A. Journal." The paper called for considerable favorable discussion and it was referred to the Committee on Publication with the approval of the suggestions by the Branch.

Professor Otto Raubenheimer then read a paper entitled, "A Review of the British Pharmacopœia." Owing to the late hour, Prof. Raubenheimer limited his remarks. After calling attention to various changes the author expressed the opinion that the work was not as good as it ought to be.

The attention of the Branch was directed to the fact that the U. S. P. Revision Committee had decided to adopt the term "mils" in place of "cc.," and the following resolution introduced by President Mayo of the parent body was unanimously adopted:

Be it resolved, that the New York Branch protests against the adoption of the term "mils" for "cc.," and that the Chairman of the Revision Committee of the U. S. P. call for another vote on the question.

JEANNOT HOSTMANN, Secretary.

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PITTSBURGH.

At the meeting of the Pittsburgh Branch held Friday evening, April 16th, the members and visitors were given a rare treat in listening to the paper presented by P. Henry Utech, of Meadville, Pa., on the subject, "An American Pharmacist in Germany," based upon his experiences as a member of the party of pharmacists that visited Europe last summer under the auspices of the German Apotheker Society, of New York, which was suddenly terminated when about half the itinerary had been covered on account of the breaking out of the war. Mr. Utech covered more than one hour, every minute of which was filled with interesting and instructive, as well as amusing accounts of men and things pharmaceutical encountered on his travels. We

would be glad to give a full reproduction of the paper in these columns, but space, and the rules of the American Pharmaceutical Association, forbids, so we must content ourselves with but a brief epitome:

"The German Apotheker is proud of his profession, which carries with it a certain prestige and distinction, and endeavors always to the best of his ability to live up to the precepts and principles which his predecessors have handed down to him—principles which serve as a beacon light on his high road to success. To become an Apotheker in Germany one must undergo a long, tedious process of study and training; he must assure the government of his fitness through a thorough examination. When an early member of the famous family of Merck, Johann Justus Merck entered upon his four years of apprenticeship in the Royal Court Pharmacy in Dresden, in 1741, among his other duties the following was exacted of him: "He was required above all things to respect God and His holy word, to hear the latter with pleasure and to pray morning and evening. He was to have no money in his possession and to keep free from all frivolous and luxurious habits."

In Darmstadt is located the plant of these chemical manufacturers known throughout the world—Merck's. This business was founded in 1668 as a small pharmacy by Frederick Johann Merck, this pharmacy has ever since been in continuous possession of the Merck family, and is still in operation under the name of "The Engel Apotheke," conducted by Dr. Emanuel August Merck, who is also one of the joint owners of the extensive chemical plant. The present plant occupies an area of about 75 acres, and is situated one mile north of the city of Darmstadt, and consists of 204 separate buildings. In equipment it affords a striking illustration of every latest appliance that man's ingenuity has evolved, and every possible protection is provided for its employes. It is surrounded by a colony of model dwellings for its working people, has an electric station, gas plant, and water works. There are old age pensions, allowances for heads of families during illness and a small donation of money each time a new member arrives in the family.

Since the European war has begun we as pharmacists have been brought face to face with the stern realization of our dependence upon the warring nations for many of our supplies. One of our American drug journal editors has called attention to the fact that "we as a nation consume more and produce less drugs than any other country on the globe."

Among the many peculiarities that Mr. Utech noted that differ from usage in this country are that prescriptions are always returned to the patient after filling; all liquids are dispensed by weight; graduates are but rarely met with; poisons are kept in closets with always more than one and frequently as many as three locked doors to open before gaining access; patent medicines are sold only under a special license; drogeries handle toilet articles, sundries, soaps, perfumes, rubber goods, etc., but are not permitted to dispense drugs nor compound prescriptions, that being the business of the apotheker in which he is protected by the government, and it permits of no competition up to a population of ten thousand.

At the conclusion of Mr. Utech's paper, Dr. J. A. Koch, who spent six months in Dresden as a student, gave some interesting and amusing instances of famous men and noted places which Mr. Utech had mentioned in his paper. In all this was the most enjoyable evening's entertainment the Branch has ever enjoyed.

Mr. Campbell emphasized the importance of the Question Box feature of the Branch meetings, and said more use should be made of it by pharmacists with problems to solve, and presented several questions himself covering some of the proposed additions to the new pharmacopœias which he proposed be embodied for discussion in the program for the May meeting.

Dr. A. F. Judd requested the members to secure for him samples of "Cream Tartar" from different drug stores, as well as groceries, to assist him in work he has in hand covering conditions as to quality and prices in the open market of that article.

During the meeting, Dr. J. H. Wurdack announced the sad news that Dr. Emile F. Krapf, whose lecture on Radium delivered at the February meeting and which had attracted wide attention, had died on April 9th, after a short illness with pneumonia. Dr. Krapf was a young man and gave promise of having a brilliant future.

B. E. PRITCHARD, Secretary.

SAINT LOUIS.

Dr. J. A. Warner gave a stereopticon lecture on "The Manufacture of Antitoxic Sera," and Dr. J. C. Falk a talk on the subject, "Why Physicians Should Prescribe," before the April 16th meeting of the Saint Louis Branch of the American Pharmaceutical Association.

The following participated in the discussion: J. J. Hoelscher, E. A. Sennewald, Dr. Gustav Rehfeld, G. T. Lehmberg, J. A. Morlan, Julius C. Hoester, J. W. Mackelden, C. H. Bierman, Grace Steingardt, Lydia F. Batdorf, Gustav Kring, Dr. W. P. Henrich, J. M. Good, Herman J. Couch, J. T. Walsner, Chas. H. Horton, Dr. J. C. Falk, W. K. Robinson, W. E. Crampsey, Dr. J. A. Warner, C. T. Buehler, C. Francis Sennewald, Dr. H. M. Whelpley, Chas. Gietner.

General Secretary William B. Day, Treasurer H. M. Whelpley and Editor E. G. Eberle spent several days in St. Louis discussing Association matters, and more particularly with regard to the Journal.

Monday noon, April 5, Dr. Whelpley guided the other two members of the delegation towards a place where strength might be developed by partaking of food. Instead of a quiet lunch the visitors were agreeably surprised by a company of about forty St. Louis pharmacists; with few exceptions, members of the local Branch, and the others so near, that the San Francisco meeting will not pass by without their accession. The hour was passed socially while enjoying the surprise dinner. At night, Dr. H. M. Whelpley, Professor Day and E. G. Eberle were guests of Dr. Charles E. Caspari at the University Club.

JULIUS C. HOESTER, Secretary.

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CINCINNATI.

The regular monthly meeting of the Cincinnati Branch, A. Ph. A., was held April 15, 1915, at Lloyd Library. President E. H. Thiesing presided.

The reading of the minutes of previous meetings and the reports of committees having been disposed of, the President introduced Mr. Louis Werner, Jr., who gave a very interesting talk on "New Organo Metallic Compounds," in which he demonstrated the formation of many compounds; such as Acetphenetidin from the Benzene Series, the formation of Salvarsan and many others. An interesting discussion followed in which Mr. F. W. Weismann, Prof. C. T. P. Fennel and others participated. Mr. Weaver was warmly commended by the members for his excellent paper, after which President Thiesing introduced Professor John Uri Lloyd, who spoke on "Lloyd's Alkaloidal Reagent," giving experimental demonstration. He demonstrated his reagent: "Hydrous Aluminum Silicate," for example with powdered Sanguinaria, treating same with acidulated water, dividing the filtrate into two portions and treating one portion with the reagent: the colorless filtrate of which shows an absolute absence of the active principle of sanguinaria, giving positively no result with Mayers' Reagent for alkaloids. He shows how all alkaloids may be removed by Lloyd's Reagent. The Professor's investigations have extended over a period of forty years, and he believes that this is a beginning of a new era of organic and analytical chemistry, laying particular stress upon the experiments in Colloidal Chemistry, so well illustrated by Dr. Oswald and others.

The discussions which followed Professor Lloyd's lecture was participated in by Mr. Chas. G. Merrell, Professor C. T. P. Fennel, Professor Theo. D. Wetterstroem, and others, one claiming "it is a matter of adhesion, that charcoal may have the same adsorption," or, again, "I do not believe in colloidal action, but in catalytic action," but all agreed upon the absolute practical results shown by Lloyd's Reagent.

Professor Lloyd was tendered a rising vote of thanks by his appreciative auditors.

CHAS. A. APMEYER, Secretary.

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NORTHWESTERN BRANCH.

The March meeting of the Northwestern Branch of the American Pharmaceutical Association was held at the Nicollet Hotel, Minneapolis, Thursday evening, March 18, 1915. The meeting was preceded by a dinner and a brief business session of the Minneapolis Retail Druggists' Association. As this was the annual meeting of the Branch, reports were received from the various officers, and the annual election took place. Secretary Newcomb reported briefly upon the work of the past year and referred to the sixteen

new members acquired by the branch since the last annual meeting.

The Nominating Committee reported the following names as nominations for office during the coming year: President, A. D. Thompson, Minneapolis; Vice President, Truman Griffen, Minneapolis; Secretary-Treasurer, E. L. Newcomb, Minneapolis; Executive Committee, F. A. U. Smith, St. Paul; F. M. Parker, St. Paul; S. W. Smetana, Hopkins; A. J. Kline, Minneapolis. The names as presented by the committee were unanimously elected.

By motion the Branch voted an assessment of $1 upon each active member to defray the expense of the secretary in connection with the sending out of meeting notices, etc.

Communications were read concerning the preliminary report of the Transportation Committee and copies of the report were distributed among those present.

The Branch concurred in the resolution concerning the death of Mr. Frank W. Klenert, adopted earlier in the evening by the Minneapolis Retail Druggists' Association.

The regular program for the evening, which was carried out, was as follows:

1. The Assay of Spiritus Aetheris Nitrosi and Acidum Hydrochloricum Dilutum, with demonstrations. By Prof. G. Bachman.

2. A continuation of the discussion on Spirtus Aetheris Nitrosi, Acidum Hydrochloricum Dilutum, etc., begun at the Scientific Section meeting of the Minnesota State Pharmaceutical Association. The best methods for the preparation and preservation of the above named products.

3. Latest rulings on the Harrison Anti-Narcotic Law.

4. The State Anti-Narcotic Bill and its provisions.

Professor Bachman's demonstration of the assay of Spirit of Nitrous Ether was highly appreciated by the members present and elicited many questions. The apparatus designed by Prof. Frank X. Moerck was exhibited and its use demonstrated. Prof. Bachman submitted the following concerning this preparation and urged each pharmacist to give strict attention to this preparation in order that the physician may obtain the result which he has a right to expect:

1. Do not make up more than the quantity sold within a month. Buy the concentrated Spirit, preferably in hermetically sealed tubes. The contents of one of which will make a pint of Sweet Spirit of Niter.

2. Keep the Spirit in completely filled bottles in such sizes as are usually called for by the trade and these stored in a cool place protected from light.

3. Air space in the bottle has much to do with the decomposition of the Spirit.

4. Do not expose the Spirit to sunlight as this is one of the chief causes of decomposition.

5. Amber colored bottles afford good protection.

The paper by Prof. Bachman was discussed by Messrs. Griffen, Frost, President Thompson, Dean Wulling, Schmidley, Kline, Danek and others. Mr. F. A. U. Smith explained in detail the reason why amber colored bottles afforded a protection to the substances contained therein, which are susceptible to the actinic rays of light. Attention was called to the indiscriminate use of blue bottles for preparations which should receive the greatest protection from chemically active light rays.

Following the discussion of Sweet Spirit of Niter, the matter of a joint meeting between Twin City physicians and Twin City pharmacists was brought up and after discussion, the following motion was unanimously passed: "Moved by Dean Wulling, seconded by Mr. Frost, that the secretary be instructed to communicate with the chairman of the Minneapolis R. D. A. and the chairman of the St. Paul R. D. A. requesting each to appoint one pharmacist, who with a member of the Northwestern Branch, A. Ph. A., to be appointed by the president, are to constitute a committee of three to bring about not later than early May, a joint meeting of pharmacists and physicians of Minneapolis, and later a joint meeting of pharmacists and physicians of St. Paul, the committee to have power to make necessary arrangements."

Mr. John P. Jelinek, chairman of the Legislative Committee of the State Association, spoke on the state anti-narcotic bill and its provisions and urged the support of the Branch for the passage of the bill by the 1915 session of the Minnesota legislature. After some discussion, the bill was endorsed by the Branch.

About 50 attended the dinner and meeting.

NASHVILLE.

The regular meeting of the Branch was held at Bloomstein's Hall, March 17th. In the absence of President E. F. Trollinger, Vice-President J. O. Burge presided.

Besides the regular members, there were in attendance a number of physicians, pharmacy students and attorneys who had been invited to hear a discussion of several bills relating to pharmacy, which have been introduced at the present session of the Legislature.

Dr. Ruddiman reported that the committee appointed at the last meeting had held a satisfactory conference with Dr. L. P. Brown in regard to amending the State anti-narcotic law.

W. R. White then made a report for the Legislative Committee which showed that bills had been introduced to allow persons who had held permits for four years to become Registered Pharmacists without examination by the Board; to require the dispensing of poisons in triangular bottles only; to regulate the sale of patent and proprietary medicines and toilet articles by requiring registration of the ingredients and therapeutic claims with the State Pure Food Inspector, to whom a special tax must be paid; to make it a felony to advertise or solicit business for a preparation to cure cancer or any other chronic disease; to prohibit the sale of heroin in this state, and to regulate the sale of alcohol by druggists.

After remarks had been made on the various bills by Mr. G. S. Martin, Dr. Holmes, D. J. Kuhn, Dr. E. A. Ruddiman, S. C. Davis, Dr. J. M. Rogoff and W. R. White, expressing the opinion that most of the bills were revolutionary and detrimental to the best interests of pharmacy, a resolution was adopted that the first three bills do not fill the requirements of the conditions and should be rejected. The remaining bills were referred to the Legislative Committee.

Dr. J. M. Rogoff then announced that he would give a series of lectures entitled, "A Scientific Side Line for the Pharmacist," in which he would demonstrate how the druggist can test urine, sputum and other physiological secretions, at Furman Hall, Vanderbilt, under the auspices of the Branch, and invited all who were interested to attend.

W. R. WHITE, Secretary.

College and Society

POST-GRADUATE PRIZES IN THE FORM OF A. PH. A. MEMBERSHIPS.

It will no doubt interest the members of the A. Ph. A. to learn that five prizes of nominations to memberships in the Association are offered in the department of Pharmacy of the College of Jersey City.

One is offered by Dr. Otto Raubenheimer, Professor of Pharmacy, and is to be given to the post-graduate student writing a thesis on a pharmaceutical subject. Another is offered by Dr. Joseph Koffler, Professor of Chemistry, and is to be awarded to the post-graduate student writing the best thesis on a chemical subject. The other is offered by Dr. Jacob Gutman, Professor of Physiological Chemistry and Clinical Microscopy, for the best thesis on that subject. Still another is offered by Dr. Felix von Oefele, Director of the Department of Balneology and Krunotherapy for the best thesis on a subject pertaining to this department. Last, but not least, in order to arouse more interest in Pharmaceutical History, Professor Otto Raubenheimer has offered another prize for the best thesis, written on that particular subject.

Another requirement is that besides the writing of the thesis the same also has to be properly defended before the faculty. Besides the one-year's membership in the A. Ph. A., a Certificate of Excellence issued by the Association and properly engrossed will also be awarded.

The Journal will be glad to learn of A. Ph. A. memberships offered by Colleges of Pharmacy for mention in these columns.

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NORTHWESTERN UNIVERSITY SCHOOL OF PHARMACY EXTENDS COURSE.

Northwestern University School of Pharmacy announces that beginning with the session of 1915-1916 the course for the degree of Graduate in Pharmacy will occupy two years of thirty-two weeks each; and the course for the degree of Pharmaceutical Chemist will occupy three years of thirty-two weeks each.

THE COLLEGE OF PHARMACY OF THE UNIVERSITY OF MINNESOTA.

Although the student-body of the College of Pharmacy of the University of Minnesota has for some years now been made up almost wholly of high-school graduates, high-school graduation has not heretofore been an inflexible requirement for entrance because of the desire of many Minnesota pharmacists that entrance requirements be maintained at less than a high-school qualification. It is very gratifying to be able to announce now that recently the Minnesota State Pharmaceutical Association approved the standing recommendation of the pharmacy faculty that a high-school training or an equivalent be made a prerequisite to entrance upon the study of pharmacy at the University of Minnesota. Acting upon this approval of the Association the University Regents have enacted the existing entrance conditions into requirements, so that the entrance qualifications to the College of Pharmacy of the University are now formally placed at a high-school training or an equivalent.

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NORTH CAROLINA PHARMACEUTICAL ASSOCIATION.

The thirty-sixth annual meeting of the North Carolina Pharmaceutical Association will be held in Durham on the 15, 16, 17 of June, 1915.

An exceptionally large attendance at the meetings is expected this year because of two factors which tend to make successful conventions: First, the traveling men have organized into an Auxiliary of the Association and are going to assist in making the Durham meeting a success from an entertainment standpoint, and second the city of Durham is in the central part of the state and is easily reached from all parts of North Carolina. Then too, the local druggists are well organized, are enthusiastic over the approaching meeting, and promise to do everything possible to make things pleasant for the visiting druggists.

Mr. P. W. Vaughan, for thirteen years general secretary of the N. C. P. A., was elected local secretary at the Hendersonville meeting. Those familiar with Mr. Vaughan's deep interest in the Association and his previous record as secretary will anticipate a most successful convention.

Durham is one of the largest, if not the largest, smoking tobacco manufacturing towns in the world. It will prove a matter of great interest to take a trip through the large factories engaged in making such popular brands of "smokes" as "Bull Durham," "Duke's Mixture," "Fatimas," "Piedmonts," etc., etc., since the various processes involved are intricate, yet wonderfully fascinating.

Mr. G. C. Goodman, of Mooresville, will preside over the meetings. A number of important matters will be brought to the attention of the members. It must be, it *will* be, the best meeting in the history of the North Carolina Association.

J. G. BEARD, Secretary.

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NORTH CAROLINA SCHOOL OF PHARMACY.

Another public service feature has been added by the University of North Carolina for the benefit of pharmacists throughout the state. This feature is the establishment of a Bureau of Employment which is conducted under the direction of the School of Pharmacy, by the assistant professor of pharmacy, J. G. Beard, who is also secretary of the North Carolina Pharmaceutical Association.

This bureau meets a long-felt demand of the North Carolina pharmacists, as it offers a means whereby proprietors may secure clerks and clerks can locate positions without any expense to either party. No charge will be made for any service rendered by the bureau.

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UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

The members of the senior class had the pleasure of listening to two excellent lectures on the subject of "Antitoxin and Vaccines," and the second on the subject of "Physiological Testing." These were given by Mr. O. V. R. Smith, of Parke, Davis & Co.

The annual banquet of the Alumni Association was held at the Congress Hotel, Wednesday evening, April 28. Prof. Joseph P. Remington, President James, members of the faculty and members of the Alumni responded to toasts. The members of the class of 1890 celebrated their silver anniversary by attending this banquet. The graduating class, the largest in the history of the school, were the guests of the Alumni on this occasion.

Professor Day recently made an address before the evening classes of the Young Men's Christian Association at the Division Street Branch on the subject of "Pharmacy as a Profession." This was one of a series

of lectures intended to aid the young men in selecting a career.

Mr. William Loesch, of the Public Drug Company, Chicago, has presented to the School of Pharmacy a second lot of about one hundred text and reference books on pharmacy, chemistry, botany and materia medica.

The senior students recently visited the laboratories of Bauer & Black and were shown the process of making absorbent cotton, medicated gauzes and adhesive plasters. The excursion was in charge of Professor Snow. <>

PROFESSOR BEAL TO ADDRESS ILLINOIS PHARMACISTS.

A notable feature of the coming convention of the Illinois Pharmaceutical Association, which is to be held at Springfield, June 15, 16 and 17, will be an address by Prof. James Hartley Beal. The officers of the Association are very much pleased to have Professor Beal's acceptance of their invitation to adress the convention, especially in view of the fact that Professor Beal comes to the Association as an adopted son of Illinois, since he has made his home at Urbana. Professor Beal's long experience in Association activities, no less than his legal training and his participation in the framing of the Harrison Bill and other important legislation, make his accession to the Illinois Pharmaceutical Association most important and timely. It is the hope of the officers of the Association that an unusually large number of members will avail themselves of this opportunity to hear Professor Beal and welcome him to the Illinois Pharmaceutical Association. <>

A CORRECTION.

I notice an error in the article on cigarettes as published in the April issue of the Journal.

I find the error was in copying the "Analysis of Cigarette Papers. The total ash in the Austrian papers should be 4.95, and in the French 5.12, and the correction would read as follows:

Ash	4.95	5.12
Calcium oxide	88.80	84.02
Magnesium oxide	1.90	1.68
Iron, alumina and silica oxides	6.15	2.15

You understand the ash is made up of calcium, magnesium, etc., as stated in percentage, but the total ash is as above and not 88.80 and 84.02 AZOR THURSTON.

The Pharmacist and the Law

STATE ANTI-NARCOTIC BILL.*

Prepared at the request of the Executive Committee N. A. R. D., by Messrs. J. H. Beal, F. H. Freericks and Hugh Craig.

A BILL

To Provide Against the Evils Resulting from the Traffic in Certain Habit-Forming Narcotic Drugs, to Regulate the Sale and the Having in Possession of Such Drugs, and Providing Penalties for the Violation Thereof.

Be it enacted, etc.

Section 1. It shall be unlawful, except as hereinafter provided, for any person to have in possession, or to deal in, dispense, sell, or otherwise dispose of any opium or coca leaves, alpha- or beta-eucaine, or any compound, manufacture, salt, derivative, or preparation thereof, or synthetic substitute therefor.

Proof of the possession of any of the substances enumerated in this section shall be construed as *prima facie* evidence of dealing in the substances so possessed.

Provided, That nothing contained in this section shall be construed to apply:

(a) To decocainized coca leaves or preparations made therefrom which do not contain cocaine, or to chemical constituents or derivatives of opium or coca leaves or of their alkaloids which do not possess narcotic or habit-forming properties.

(b) To the possession of any of the abovementioned substances by licensed physicians in connection with the practice of medicine or surgery; by licensed dentists in connection with the practice of dental medicine or surgery; by licensed veterinarians in connection with the practice of veterinary medicine or surgery; by licensed pharmacists in connection with the practice of pharmacy, by hospitals or similar institutions, when intended exclusively for the treatment of patients in said hospitals or institutions; by manufacturers; by wholesale druggists, or by colleges, scientific or public institutions when intended exclusively for educational, scientific or public purposes, provided that all such hospitals or similar institutions, wholesale druggists or

* The bill adds no additional burdens, as it corresponds with the Harrison Law.

manufacturers have been duly authorized or licensed in accordance with Section 3 of this act.

(a) To the possession of any of the abovementioned substances by a common carrier for delivery to a specified consignee; by a warehouseman holding possession under the direction of the owner thereof; by the agent or employe of a principal authorized by law to possess the same when such agent or employe is acting within the scope of his employment in the conduct of a lawful business; or by duly authorized officers of the law when obtained and possessed for the purpose of discharging any duty imposed by law.

(d) To the possession of any of the abovementioned substances which have been dispensed by a licensed physician, dentist, veterinarian, or pharmacist, in conformity with the provisions of this act, when possessed in a container which is labeled in conformity with the provisions of this act.

(e) To the possession by consumers or the possession or sale by retail dealers licensed by the Board of Pharmacy in conformity with Section 3 of this act, by manufacturers, wholesale druggists, licensed pharmacists, physicians, dentists or veterinarians, of bonafide medicinal preparations intended for internal use which do not contain in one fluidounce or in one avoirdupois ounce, separately, more than two grains of opium or the extractive of two grains thereof, or more than one-fourth grain of morphine or any salt thereof, or more than one grain of codeine or any salt thereof, or more than one-eighth grain of heroin or any salt thereof; or of bonafide medicinal preparations suitable for external use only which do not contain cocaine, or alpha- or beta-eucaine, or any salt or derivative thereof or synthetic substitute therefor; *provided*, that all such preparations shall contain other active drugs in sufficient proportion to confer upon them other and additional medicinal properties than those possessed by the unmixed drugs, salts or derivatives named in this section; *and provided further*, that all such preparations are possessed, sold or otherwise disposed of solely for use as medicines and not for the purpose of evading the intendment of this act.

(f) To the sale or other disposal of the substances enumerated in this section by manufacturing pharmacists or chemists, wholesale druggists or licensed pharmacists, to manufacturers, wholesale druggists or licensed pharmacists, or to licensed physicians, surgeons, dentists, or veterinarians, or to hospitals or similar institutions, colleges or public institutions: *Provided*, That a record of every such sale or disposal, showing the date of the transaction, the names and addresses of the parties thereto and the names and quantities of the substances so transferred be made and kept on file by both parties to the transaction for two years, open to inspection by duly authorized officers of the law; *provided also*, that the making and preserving of any order or duplicate, or of any record required by any other law to be made and preserved, which order, duplicate or record shall set forth the facts above required to be stated, shall be deemed a satisfactory compliance with the provisions of this paragraph.

Whenever required so to do by the authorities charged with the duty of enforcing the provisions of this act, any person possessing, selling or distributing any of the substances enumerated in this section shall render an itemized statement, verified by affidavit, of all such substances received by him within the ninety days next preceding the date of such request, including the names of the persons from whom received, the date when received, and the quantity in each instance received.

(g) To the sale or other disposal to a consumer of any of the substances enumerated in this section, by a licensed pharmacist pursuant to the written prescription of a licensed physician, dentist, or veterinarian. *Provided*, That with the exception of any prescription for a preparation which is exempted under paragraph (e) of this section, such prescription is dated as of the day on which it was written, bears the signature and address of the prescriber and the name of the person for whom the substance is intended; or if intended for a lower animal, shall state the kind of such animal and the name of the owner thereof; *provided further*, that such prescription when compounded or dispensed shall be serially numbered, dated, and filed by the compounder, and be retained on file for two years open to inspection by any duly authorized officer of the law; *and provided further*, that no such prescription shall be filled more than once, and no copy of such prescription shall be given to any person, except to the original prescriber or to a duly authorized officer of the law for use in connection with the enforcement of this act or of any other law; *and provided further*, that the medicine dispensed upon such prescription shall be delivered in a container which is labeled with

the serial number of the prescription or the name of the substance, the date when dispensed, the name of the person for whom intended, or if intended for a lower animal, with the kind of such animal and the name of the owner thereof, the name of the prescriber, and the business name and address of the establishment from which dispensed.

(h) To the administration, sale or other disposal, except as hereinafter provided, of any of the above-mentioned substances by a licensed physician or licensed dentist to a patient upon whom he is in professional attendance, or to the administration of such substances to a lower animal and not to a human being by a licensed veterinarian: *Provided*, That such licensed physician, licensed dentist or licensed veterinarian, shall keep a record of the name and address of the patient, or, if intended for a lower animal, of the kind of animal and the name and address of the owner thereof, the date of the sale or other disposal, and the name and amount of the drug transferred, in every such instance as he may dispose of otherwise than by direct administration to a patient, more than six grains of opium or the extractive of six grains thereof, or more than one grain of cocaine, or more than one grain of morphine, or more than four grains of codeine, or more than one-half grain of heroin, or of any salt or derivative of, or synthetic substitute for, any of the foregoing substances. The record so made shall be preserved on file for a period of two years and be open to inspection by any duly authorized officer of the law, and except when administered directly to a patient, all such substances shall be delivered in a container which shall be labeled in conformity with the provisions of paragraph (g) of this section.

Section 2. It shall be unlawful for any licensed physician, licensed dentist, or other person to furnish to or prescribe for the use of any habitual user of the same any of the substances enumerated in Section 1 of this act, or for any licensed dentist to furnish or prescribe any of the said substances for the use of any person not under his immediate treatment as a dentist or for any other purpose than as a part of such treatment, or for any veterinarian to furnish or prescribe any of the said substances for the use of any human being.

The provisions of this section shall not be construed to prevent a licensed physician from prescribing in good faith for the use of a patient under his care for the treatment of a drug habit any substances he may deem necessary for such treatment: *Provided*, That the prescriptions given, the records to be made and preserved, and the labels of the containers in which the substances are dispensed shall conform in all respects to the requirements for prescriptions, records and labels provided in Section 1 of this act; *provided further*, that the physician shall immediately notify the state board of health of the beginning of the treatment of a patient for a drug habit, and the name and address of such patient, and shall repeat such notice every thirty days during the period such treatment is continued. It shall be the duty of the state board of health to retain on file for a period of two years all notices received by it under this section, which notices shall be open to inspection by the authorities charged with enforcing the provisions of this act.

Section 3. Where the possession, sale or other disposal of any the substances enumerated in Section 1 of this act by manufacturers, wholesale druggists, hospitals, or similar institutions, is not under the supervision of a licensed pharmacist, physician, dentist or veterinarian, a license shall be secured from the state board of pharmacy authorizing such possession, sale or other disposal.

The state board of pharmacy is authorized to license as a retail dealer for the purposes of this act the proprietor or manager of a retail merchandising establishment having a fixed location not less than one mile distant from the place of business of a registered pharmacist or from the office of a licensed physician, authorizing such licensed dealer to possess, sell and otherwise dispose of the preparations which are exempted under paragraph (e) of Section 1.

Such licenses shall be issued by the state board of pharmacy only when said board is satisfied that the possession, sale or other disposal authorized thereunder is for legitimate use only, within the intendment of this act.

The said board of pharmacy is authorized to require the prepayment of an annual fee of one dollar for each license issued to a manufacturer, wholesale druggist, hospital or similar institution, or retail dealer, in conformity with the provisions of this section.

Section 4. Whoever shall violate or fail to comply with any of the provisions of this act, or shall make or cause to be made any false statement in any of the prescriptions, records or reports required by this act, or shall muti-

late, conceal or destroy any of the said prescriptions, records or reports, or whoever, for the purpose of obtaining any of the substances enumerated in Section 1 of this act, shall falsely represent himself to be a manufacturer, wholesale druggist, licensed physician, licensed pharmacist, licensed dentist, licensed veterinarian, or licensed dealer, or to be conducting a hospital or similar institution, or who shall make or issue a false or forged prescription, or alter or change a lawfully issued prescription, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not more than $50, and upon conviction of a second or any subsequent offense shall be fined not more than $500, or imprisoned not more than six months, or both fined and imprisoned in the discretion of the court. *Provided*, That no legally licensed pharmacist shall be held liable for the innocent compounding or dispensing of any of the articles enumerated in Section 1 of this act in consequence of a false, fraudulent, altered or forged prescription which he in good faith believed to be the original unaltered prescription of a licensed physician, dentist or veterinarian, issued for a lawful purpose.

It shall not be necessary to negative any of the exceptions or exemptions of this act in any complaint, information, indictment or other proceeding laid or brought under this act, and the burden of proof of any such exemption or exception shall be upon the person claiming the benefit thereof.

Section 5. Whenever any licensed physician, pharmacist, dentist, veterinarian, manufacturer, wholesale or retail dealer, or institution shall have been twice convicted in a court of competent jurisdiction of a substantial violation of this act, the officers or board having power to issue license to such licensed persons, may, after giving the convicted licensee reasonable notice and fair opportunity to be heard, order the suspension of such license for a stated period, or may order the complete annulment and revocation of such license, if in the discretion of the board, the public welfare requires such suspension or revocation.

Whenever it shall be made to appear that any licensed pharmacist, physician, dentist, veterinarian, or other person authorized to administer or otherwise dispose of the substances enumerated in Section 1 of this act, has become addicted to the personal use of any of the said drugs in a manner contrary to the public welfare, the officers or board empowered to issue such licenses may, after due notice and a fair opportunity for a hearing to the person accused of such drug addiction, order the suspension or complete annulment and revocation of the license of such addicted person.

The provisions of this section shall not be held to prohibit an appeal to any court having jurisdiction for a review of the sufficiency of the evidence upon which the suspension or revocation of any license was made.

The word "person" as used in this act shall be construed to mean and include a firm, partnership, association, company or corporation as well as a natural person.

In case of the prosecution of an individual, a firm, partnership, association, company, or corporation for any violation of this act, the agent of such individual or the agent, officer or member of such firm, partnership, association, company or corporation, whose act or omission caused or permitted such violation may, in addition to the charge against the principal, be separately charged with such violation and on conviction shall be subject to all the penalties imposed by this act, including suspension or revocation of registration or license in the same manner as if the said act or omission had been for or on his own account.

Section 6. It shall be the duty of the state board of pharmacy or of the public prosecutor to enforce the provisions of this act, to investigate or cause to be investigated all reports of its violation, and to prosecute all violations of the same, and the said state board of pharmacy is hereby empowered to retain and employ such agents, inspectors, and other persons as it may deem necessary for that purpose.

All fines recovered under this act shall be paid to the order of the state board of pharmacy, and by said board shall be covered to the state treasury.

Section 7. That the sum of ——— dollars, or so much thereof as may be necessary, be and hereby is appropriated, out of any money in the state treasury not otherwise appropriated, for the purpose of carrying the provisions of this act into effect.

Section 8. All acts and parts of acts in conflict with the provisions of this act shall be, and the same are hereby repealed.

Section 9. This act shall be in force from and after the ————.

Necrology

FRANK D. OSBORN.

Frank D. Osborn, of Davenport, Iowa, was born at Davenport, Iowa, on December 16, 1884, and died after a long illness, on February 24, 1915, at the home of his parents, Mr. and Mrs. C. E. Osborn, of Davenport. He received his early education in the public schools of his native city, graduating from the high school in 1903. He then was apprenticed to S. Moetzel for two years, and later, entered the School of Pharmacy, University of Michigan, graduating with high honors in 1908. After graduation, he was employed as chemist for the Davenport Corn Products Refining Co., and then opened the first drug store in Bettendorf, Iowa, and was, also, the first postmaster of that city.

Mr. Osborn was a member of the Alumni Society of the University of Michigan, and the American Chemical Society, and became a member of the American Pharmaceutical Association in 1913. J. W. E.

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FREDERICK A. HUBBARD.

Frederick Arthur Hubbard, of 8 Hollis Street, Newton, Mass., for twenty-seven years a pharmacist and formerly an alderman of that city ,died on April 19, 1915, from heart disease, at his summer home, Duxbury, Mass. He was born in Manchester, N. H., and was 56 years of age. The funeral services were held at the Methodist Episcopal Church on April 22d.

Mr. Hubbard was a member of the American Pharmaceutical Association since 1907 and Chairman of the New England Branch, Ex-President of the Massachusetts State Pharmaceutical Association, and a member of its Legislative Committee. He was, also, a member of the Massachusetts College of Pharmacy and one of its Trustees, and President of the National Association of Boards of Pharmacy (1907-1908). He served two terms as a member of the Massachusetts State Board of Pharmacy, and was a member of the National Association of Retail Druggists. He was actively interested in the Dalhousie Lodge of Masons, and the Hunnewell Club, and was the first president of the Newton Board of Trade.

Mr. Hubbard leaves a widow, a daughter, Mrs. Florence Whitcomb, of Oxford, Ohio, and a son, George W., a student at the Massachusetts College of Pharmacy and associated with him in business.

Mr. Hubbard was highly respected as a citizen and by the members of his profession. He gave generously of his time for the benefit of his fellow pharmacists, and in both state and national legislation he was deeply interested. He was a man among men and a credit to his craft. All honor to his memory. J. W. E.

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FRED. M. FISK.



Fred M. Fisk, manager of the European headquarters of Parke, Davis & Co., in London, died on the evening of Saturday, April 10. While the end came suddenly, Mr. Fisk had been seriously ill and in the hands of physicians for a number of months.

Mr. Fisk's connection with Parke, Davis & Co. covered a period of something like thirty years. He was employed to explore what was then new territory for the products of the house. First "covering" the Pacific Coast, he was subsequently sent on a trip around the world. His success in introducing the preparations of the house in countries like Japan, India and Australia ultimately led to the establishment of branches and to the final development of an enormous trade in those sections of the world.

Mr. Fisk was born in Adrian, Michigan

He was prominent in the Masonic circles of London, and was master of the American Masonic Lodge at the time of his death. In the American Colony he was always conspicuous; he was secretary of the London branch of the American Navy League, and president of the American Society.

Council Business

COUNCIL LETTER No. 13.

Philadelphia, Pa., January 4, 1915.

To the members of the Council:

Motions No. 23 (*Approval of General Rules of Publication*), *No.* 24 (*Election of Local Secretary for* 1915) and *No.* 25 (*Disapproval of Proposed Exhibit at the Panama-Pacific Exposition*) have each received a majority of affirmative votes.

The following communication has been received from Frank H. Freericks:

"In voting 'No' on Motion No. 22, I feel the need for making a short explanation: The discussion which has taken place with reference to invitations was in each case an expression of an individual opinion or view, and in no manner can it be regarded as an expression of the Council. If any of those who are directly concerned have read or do read the discussion, they will realize that the entire matter was tabled (if such be the case) purely because of propriety and thoughtful consideration. It does not seem to me that the matter will be helped any by expressing sincere appreciation for unselfish work done, and I do not understand a New Year's greeting to be called for any more this year than any other year. I assume that all brother pharmacists in every one of the countries now at war have been doing their full duty, but frankly I do not know a thing about it, and I cannot well express appreciation for the doing of something which I do not know to have been done. Am sure that it will not harm anyone to send the "greetings" and to express appreciation, but somehow I am inclined to feel that some of the recipients would smile at our expense."

If any of the members of the Council wish to change their votes on Motion 22, the opportunity is open, as the vote has not been announced.

George M. Beringer writes as follows:

"Beyond any doubt the pharmacists of the countries engaged in the present unfortunate European war are suffering many hardships and their privations and tribulations may be expected to be still further increased as the war progresses.

Already there comes to us, through Holland, an appeal for aid to the pharmacists of Belgium, many of whom have lost everything. A similar condition probably exists among the pharmacists of Northern France and in other countries where battles are being fought or have already been waged.

With peace will come even more urgently the need for the rehabilitation, the re-establishment of our brother pharmacists in these foreign countries. Many will need our aid to secure the opportunity to re-engage in their peaceful avocation as a means of livelihood.

I, therefore, recommend and will move that the American Pharmaceutical Association through the Council, appoint a Committee to co-operate with committees appointed for a similar purpose by other pharmaceutical, drug and chemical societies for the purpose of soliciting funds to aid the worthy and needy foreign pharmacists who have suffered by this war, irrespective of their nationalities.

By such a movement, American pharmacists, while maintaining neutrality, can, nevertheless, demonstrate that they are actuated by a true spirit of philanthropy to alleviate the suffering, to mitigate the hardships and to extend a helping hand to our brothers in distress across the seas."

The following communication has been received:

Philadelphia, Pa., January 2, 1915.

Members of the Council:

Gentlemen—It will be recalled that at the Detroit (1914) meeting of the Association the position of Editor of the Journal was not filled, but that the matter of selecting an Editor was left to the Committee on Publication with power to act, subject to the approval of the Council.

The Committee on Publication not being able to decide the question at the Detroit meeting, engaged Ernest C. Marshall as Acting Editor, from month to month, until the Editor could be chosen. Professor William B. Day consented to serve as General Secretary, and on the nomination of the Chairman of the Committee on Publication, was so elected.

The position of Editor was then offered to Professor E. G. Eberle, who promised to decide later. He has decided to accept the position and has presented his application as follows:

Dallas, Texas, December 1, 1914.

Mr. J. W. England, Chairman of Committee on Publication, Philadelphia, Pa.:

Dear Mr. England—Replying to the request of the Committee on Publication for a proposition under which I would accept the editorship of the Journal of the American Pharmaceutical Association, my present connection should perhaps be referred to.

In the first place, the consideration came, as you know, through suggestion, and appealed to me as a possibility for service to the Association which might reflect credit upon myself and to this end my best efforts would be directed.

My several positions which will terminate when I leave here bring me about $4,000 yearly, so that financial betterment is hardly the object with me; however, I must give thought to the financial side as quite a number look to me for support.

Leaving here, I am burning the bridges, some of which have been constructed by long friendships and service in behalf of the druggists in this section. It takes only a short while to give up that which has required years to obtain. You are more or less familiar with my activities.

Leaving now reference to my own affairs and speaking of the Journal; there will be opportunties for business throughout the year, but as advertising contracts are usually made following annual meetings, the most opportune time is in December and January.

I am of the opinion that it would be best for the Association to have the office of Secretary and Editor separate, because this insures two good workers instead of one, though very likely will involve greater expense.

These thoughts have had a part in shaping my offers which I submit for your consideration, though I think some flexibility ought to be provided for. I am open to suggestions and will be glad to have every phase discussed frankly and freely, as we are all working for the best interests of the Association.

Respectfully submitted,
E. G. EBERLE.

Application of E. G. Eberle to American Pharmaceutical Association for position of Editor of the Journal of American Pharmaceutical Association, General Secretary, etc.:

To the Committee on Publication of the American Pharmaceutical Association:

(1) I will assume the editorship and general management of the Journal of the American Pharmaceutical Association, to include the position of Advertising Manager and also the duties of General Secretary of the American Pharmaceutical Association, for a salary of $4,000 per annum, payable in monthly installments of $333.33⅓, to begin March 1, 1915, or as soon thereafter as may be practicable.

I am to be allowed two stenographers, who are to be compensated by the Association. The office expenses are to be agreed to between the Committee on Publication or those in authority and myself to be paid by the Association.

The necessary expenses incurred in attending the annual meeting of the Association are to be paid by the Association, and also all other trips made in an official capacity and sanctioned by the Committee on Publication or those in authority. All expenses, except the salaries provided, shall first be submitted for approval to the Committee on Publication or those in authority.

Or (2) I will assume the editorship and general management of the Journal of the American Pharmaceutical Association for a salary of $3,500, payable in monthly installments of $291.66⅔.

My duties shall include those of the Advertising Manager, to begin on March 1, 1915, as above indicated.

I am to be allowed one stenographer at a salary to be agreed upon between the Committee on Publication or those in authority and myself, and paid by the Association, as also the necessary office expenses.

My expenses incurred by attending the annual meetings of the Association and those made necessary for the transaction of official business shall be paid by the Association. The latter shall always be authorized by the Committee on Publication or those in authority. Respectfully submitted,

E. G. EBERLE."

The Committee on Publication has given very careful consideration to this application. Professor Eberle is one of the most earnest workers of the American Pharmaceutical Association and one of the most able pharmaceutical journalists. It is scarcely necessary to refer to his work as President of the American Pharmaceutical Association, as Chairman of the Council and as member of the Committee on Publication. It is known to every member of the Association and known most favorably.

The Committee on Publication therefore has unanimously elected (Professor Eberle not voting) Eugene G. Eberle as Editor of the Journal under the conditions of the second proposition submitted in his application above. His engagement as Editor and Advertising Manager is to begin on March 1, 1915, or later, the exact date to be fixed by the Committee on Publication (so as to give due notice of change to the Acting Editor).

The executive work of the Association is growing very rapidly. It is probably too large a task for one man to perform the duties of both Editor and General Secretary. The work of the two offices is dissimilar, and each is of large volume. A good Editor and a good General Secretary by active co-operation can do more and better work than can one man attempting to fill both positions.

Furthermore, at a cost of only $250 more than was paid to Dr. Beal as Editor and General Secretary, and $1250 less than was paid to Dr. Beal as Editor and Mr. Marshall as Advertising Manager in 1914, we can have the unusual opportunity of securing two such men as Eugene G. Eberle as Editor and William B. Day as General Sec-

retary, a combination whose enthusiasm and efficiency will be of the greatest service in promoting the interests of the Association.

It will be noticed that no mention is made in the application as to the Home Office of the Journal, but Professor Eberle states that he will leave this "entirely with the Association." The Committee on Publication is of the opinion that Columbus should be retained for the Home Office at least until the annual meeting, when the subject can be considered more fully.

The Committee on Publication asks the Council to ratify its action in selecting Eugene G. Eberle as Editor of the Journal and Advertising Manager under the conditions above stated.

Very truly yours,
J. W. ENGLAND,
Chairman of Committee on Publication.
J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

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COUNCIL LETTER No. 15.

Philadelphia, Pa., February 8, 1915.

To the Members of the Council:

Gentlemen: After the issuance of Council Letter No. 13, the following motion was received: "Moved by C. A. Mayo, seconded by H. Englehardt, that the action of the Committee on Publication in the selection of Eugene G. Eberle as Editor and Advertising Manager of the Journal of the American Pharmaceutical Association, as reported in Council Letter No. 13, be ratified by the Council."

Later (January 23), the following letter from Geo. B. Kauffman came to hand:

"In view of conditions which have arisen and of certain statements and charges made respecting the conduct of the affairs of the Association, growing out of the action of the Publication Committee in the matter of the selection of the Editor, which said statements and charges deserve more than passing comment, I move that action by the Council concerning the action of the Publication Committee in the matter of Editorship, be deferred until the next regular meeting of the Association, and that Mr. Marshall, the present Acting Editor, be given a hearing before the Council at that time."

The motion was seconded by E. H. Thiesing.

The question then arose as to which motion should be submitted first to the Council and it was referred to Chairman Eberle, of Dallas, Texas, who replied that, under the circumstances, he felt disqualified to act, and asked that the question be referred to Vice-Chairman Godding, of Boston. The latter has decided that the motion of Mr. Kauffman's should be submitted first.

Do you favor motion of Mr. Kauffman, seconded by Mr. Thiesing, as given in above letter? This will be regarded as *Motion No. 28 (Deferring Action on Editorship until next Regular Meeting of Association, etc.)*

In connection with this motion, the following letter has been received from General Secretary Day:

Members of the Council:

Gentlemen—I understand that a motion is to be presented to the Council moving that the action of the Committee on Publication in the matter of Editorship of the Journal be deferred until the San Francisco meeting of the Association on the ground, practically, that the selection of the Editor has been hasty and without proper consideration of the merits of all the candidates. As a matter of fact, may I say, on behalf of the Committee on Publication, that the subject of Editor has received most careful and serious consideration by the Committee, not only at Detroit, but since. Every candidate has received fair treatment. Injustice has been done to no one. All were weighed in the balance, and the unanimous decision of the Committee was that, in journalistic experience, in official experience in the work of the Association, and in educational experience, Eugene G. Eberle was pre-eminently the best man. It is the opinion of the Committee that the welfare of the American Pharmaceutical Association is or should be superior to the interests of any individual member. The Association is not intended to create or provide a berth for anyone.

So far as the present Acting Editor is concerned, the Committee has nothing but kindly feelings. His interests were fully considered. He was engaged at Detroit as Acting Editor, *tentatively*, and accepted the position under such conditions. He was not promised the position of Editor, and that he failed of election as such, is not to his discredit, but to the fact that a more experienced man was found.

So, with "malice toward no one, with charity for all," I ask the members of the Council to vote down the resolution to defer, if such be presented, and pass a motion to ratify the action of the Committee on Publication in selecting Eugene G. Eberle as Editor. I am, yours truly,

WM. B. DAY,
General Secretary.
Chicago, February 4, 1915.
J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

COUNCIL LETTER No. 16.

Philadelphia, Pa., February 10, 1915.

To the Members of the Council:

Motions No. 22 (Greetings to Pharmacists and Pharmaceutical Associations of other Nations) and *No. 27 (Election of Members; Applications Nos. 59-75 inclusive)* have each received a majority of affirmative votes.

In reference to Tentative Program for Fifty-third Annual Meeting (C. L. No. 14), M. I. Wilbert suggests that the time of holding the meeting of the Committee on Nominations (Monday) be made either one hour before the time of the President's Reception or one hour before the Second General Session, and to meet this suggestion, if there is no objection, the time will be made 8:30 p. m.

Wm. J. Lowry, Jr., Secretary of the Baltimore Branch, advises that Henry P. Hynson has been elected Council Representative of the Baltimore Branch, succeeding John B. Thomas.

F. W. Nitardy, Secretary of the Denver Branch, advises that Samuel T. Hensel has been elected Council Representative of the Denver Branch, succeeding John A. Martin.

Jerome A. Wilkerson has been elected Council Representative of the St. Louis Branch, succeeding Wm. K. Ilhardt. (Journ. A. Ph. A., Dec., 1914, 1747.)

A number of communications have been received relative to Motion No. 26 (Reply to Article in Pearson's Magazine), as follows:

M. I. Wilbert—"Motion No. 26: This is neither wise nor expedient."

L. E. Sayre—"Motion No. 26: I would say p. 49, line 6 takes the valuable time, etc."

E. G. Eberle—"Motion No. 26: While my conclusions were to let the article go unnoticed rather than give it further publicity, the answer is well-worded, and I can offer no objection."

F. C. Godbold—"Motion No. 26: In voting 'no' on reply to article in Pearson's Magazine, I believe that it is best for the pharmacist as individuals to answer to their patrons such complaints, and for the Association to keep out of print on the matter. I have been answering this charge for years to individuals, as occasion required, to the satisfaction of the individual. I remember on one occasion a customer 'phoned for 25c worth of Brown Mixture, the XX kind. I sent for the prescription which was Brown Mixture Tablets, No. XX. Take as directed."

T. F. Main—"Motion No. 26: In regard to the reply to article in Pearson's Magazine, it is very nicely worded but I am afraid it is over the heads of the people who read that magazine.

I have always given a short answer to those who complained that pharmacists charged one price for an article sold in bulk and a higher price for the same thing when dispensed on prescription, by calling the attention of complainant that the pharmacist's charge did not differ in any way from the practice prevailing in the trades, for instance, if one orders a carpenter to send 12 foot of 1-inch plank, he gets a bill for it, but if he orders him to send up a 12-foot 1-inch plank cut into three foot lengths, the same to be put up in a closet as shelving, he will get a bill for so many feet of plank, so many screws, so many brackets and finally for so much time, and I have always contested that the pharmacist's charge for his professional time was in the majority of cases far lower than the time charged by the ordinary laborer in the trades."

C. T. P. Fennel—"Motion No. 26: In reference to reply to Pearson article I will say that the opening statement is subject to criticism. Dispensing of medicines and their preparation in suitable form was in the hands of the physician. Alchemy next arose as an independent science. Paracelsus was the founder of Pharmacy (that is the preparation of medicine for the purpose of curing disease) by placing Alchemy with Medicine, and eventually the science of Chemistry and Pharmacy as separate sciences were evolved.

Take as a concrete example, etc. I would not use the term Baking Soda as synonymous with Bicarbonate of Soda. Baking Soda need not conform to the U. S. P. requirements, and hence the article usually sold by pharmacists and grocers, etc., is very much inferior and cheaper to the pharmacopœial Bicarbonate of Soda. I would include in the paragraph the fact that there is a vast difference between Alum, Borax, etc., used for technical purposes and those used for prescription work. Epsom Salt, the by-product of the manufacture of CO_2 gas, has no commercial value, but it is sold in immense quantities by certain class of druggists in pound packages. The article does

not conform to the U. S. P., and hence price-comparisons in prescription is not possible."

S. L. Hilton—"Motion No. 26: With reference to Motion No. 26, permit me to say that I for one do not approve of any such action by the Council; there never was or never will be any question that is handled by a newspaper man, no matter how much merit there may be in it, that can be brought to the attention of the public in which the other side will not get the worst of it; we must remember that they have everything to gain and nothing to lose, and they have every means at their command to combat every argument that may be presented, and if it has any merit or justice in it they will resort to ridicule to break it down. 'It is always the hurt dog that hollers,' and I do not want to see the American Pharmaceutical Association placed in this position to be ridiculed, consequently I must vote 'No' on Motion 26.

I might also add that I had the same proposition put up to me to answer shortly after its publication; it took me but a few minutes to decide that it was absolutely useless for the reasons that nothing would be gained as above pointed out and I could not help but losing out."

W. C. Alpers—"Motion No. 26: As to the statement prepared by the Philadelphia Branch of the American Pharmaceutical Association every pharmacist will readily subscribe to every word stated there. In my mind, however, the wording of the statement is much too mild. Stronger words expressing indignation rather than complaint should be used and the miserable vilifier punished and refuted in a manner that cannot be misunderstood. Why not ask him if the sheet of paper on which he wrote his invectives and the ink that he shamefully spilled in doing so were worth the price that he was paid for his article? Why not make the suggestion that a national board of magazine writers be created and that each writer should pass an examination as to his qualifications just as the pharmacist has to do? Such an arrangement would eliminate the miserable ignoramuses that now write on pharmaceutical, chemical and medical subjects for the purpose of creating sensation with total disregard of facts and truth.

These are only a few of the suggestions that might be made in reply to the article published in Pearson's Magazine."

Frederick J. Wulling—"Motion No. 26: Concerning the reply to Pearson's Magazine, let me say that I would not dignify the article by any reply at all. I believe the Association should entirely ignore the article, for I believe it has not injured pharmacy in the eyes of fair-minded people. If the reply is published, I would suggest the omission of the poetry because it is not sufficiently clear and apropos for the average reader. The reply would also need editing. I take it that Motion 26 intends to give the Philadelphia Branch the privilege to send this reply. In that case it should appear that the reply is by the Philadelphia Branch and not by the Association. If the reply is to be by the Philadelphia Branch, I would not mind approving the motion, but if the reply is intended to come from the A. Ph. A., then I vote 'No.'"

Professor Wulling's point that Motion No. 26 intends to give the Philadelphia Branch the privilege of sending the reply submitted to the Council and represents only the opinions of the Branch and not the Council will be (if the motion carries) adopted, unless there be objection.

Motion No. 29 (Applications for Membership). You are requested to vote on the following applications for membership:

No. 76. Samuel Cahan, 864 North Tenth St., Philadelphia, Pa., rec. by Harry Seidman and Frank X. Moerk.

No. 77. Louis H. Luck, 198 W. Union St., Burlington, Vermont, rec. by John G. Godding and Wm. H. Zottman.

No. 78. Roy Chester Charron, 426 Newbury St., Boston, Mass., rec. by Hugh C. Muldoon and Theodore J. Bradley.

No. 79. A. Julius Lindgren, 402 Central Ave., West Duluth, Minn., rec. by W. A. Abbott and E. L. Newcomb.

No. 80. Henry Duncan Llewellyn, West Side Square, Mexico, Mo., rec. by H. M. Whelpley and J. W. Mackelden.

No. 81. Roy C. Roe, 709 S. Winchester Ave., Chicago, Ill., rec. by G. D. Timmons and E. H. Wisner.

No. 82. William O. Speer, 458 Greenwich St., Valparaiso, Ind., rec. by G. D. Timmons and E. H. Wisner.

No. 83. W. M. Cordivenus, 653 Sutter St., San Francisco, Cal., rec. by Clarissa M. Roehr and H. M. Whelpley.

No. 84. Clarence Isaac Pendleton, 114 Hillside Road, Watertown, Mass., rec. by Theodore J. Bradley and Hugh C. Muldoon.

No. 85. John L. Hess, 2038 Cherry St., Philadelphia, Pa., rec. by G. H. Meeker and J. W. Sturmer.

No. 86. Maxwell M. Becker, 2465 N. Garnet St., Philadelphia, Pa., rec. by J. W. England and J. G. Roberts.

No. 87. Antonio Caparo 'y Fernandez, P. O Box 50, Havana, Cuba, rec. by Jose P. Alacan and Jose Guillermo Diaz.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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COUNCIL LETTER No. 17.

Philadelphia, Pa., February 22, 1915.

To the Members of the Council:

Motion No. 26 (*Reply to Article in Pearson's Magazine representing opinions of Philadelphia Branch*) has received a majority of affirmative votes.

Under date of January 6, a motion was received from C. A. Mayo "that the action of the Committee on Publication in the selection of Eugene G. Eberle as Editor and Advertising Manager of the Journal of the American Pharmaceutical Association, as reported in Council Letter No. 13, be ratified by the Council."

On January 23, a motion was received from Geo. B. Kauffman, deferring action on editorship until the next regular meeting of the Association, etc. (Council Letter No. 15). This motion was submitted to the Council, being regarded as *Motion No.* 28.

The results of the vote on this motion are as follows:

Yes—Messrs. Kauffman, Thiesing, Alpers, Packard, LaPierre, White, Schafer, and Hynson—8.

No—Messrs. Godding, Gordon, Gietner, Beringer, McElhenie, Day, Rogers, Seltzer, Diehl, Whelpley, C. E. Caspari, Hensel, Godbold, Wulling, Fennel, England, Osseward, Clark, Hilton, Koch, Claus, Stewart, Wilkerson and Sayre—24

Not voting—Messrs. Eberle, C. Caspari, Jr., Englehardt, Freericks, Havenhill, Hopp, Mayo, Schneider and Wilbert—9.

Motion No. 28 has therefore not been carried.

The following communication has been received from C. Herbert Packard:

February 8, 1915.

To the Members of the Council of the American Pharmaceutical Association:

Gentlemen—We have received statements regarding the filling of the position of Editor of the Journal, and I believe it is my duty to write in favor of Mr Marshall,—first, because he has filled the position made vacant by Doctor Beal's illness, in a most acceptable manner.

Secondly, I ought to speak of Mr. Marshall, because I probably know him better than many of the Council

I first met Mr Marshall in 1890 or '91, at a time when he delivered an address to a graduating class of the Massachusetts College of Pharmacy. It was without doubt the strongest and best oration I have ever heard and as such made a lasting impression upon me.

Since that time he has always shown a loyalty to pharmacy, the ability to fill every position given him, working with untiring effort in the discharge of the same.

Our first thought should be to the person filling the position at the time of an election, if his work has been well and properly done. In reference to Mr. Marshall, I have never heard a word of inefficiency, but much of praise.

Regarding Mr. Eberle for the position, will say that there is not a gentleman in the Association better equipped or one I admire greater.

Mr. England and every member of the Committee on Publication have my greatest respect as gentlemen, men of experience and of ability. I cannot help, however, to believe that they have overlooked just as good a man for the work as can be found, "overlooked because he is at hand."

It is not necessary to go abroad when looking for a man without first comparing the ones at home with the best.

In justice to Mr Marshall for the necessity of moving his home, the expense he has had to meet, his ability to fill the position, and, lastly, his liking for the work, I believe we should consider him first, and I therefore make a motion that Mr. Ernest C. Marshall be elected Editor of the Journal of the American Pharmaceutical Association.

Fraternally yours,
C. HERBERT PACKARD.

I second the above motion—Elie H. LaPierre.

Mr. Packard's motion is obviously offered as a substitute motion for Mr. Mayo's motion of January 6.

C. T. P. Fennel writes as follows:

Cincinnati, February 10, 1915.

Mr. J. W. England, Secretary of the Council, A. Ph. A.:

Dear Sir—Relative to the selection of Eugene G. Eberle as Editor and Advertising Manager of the Journal of the American Pharmaceutical Association by the Committee on Publication: I can find at this time no valid reason why ratification by the Council of the action of the Committee should be deferred to the general meeting of the Association. The action of the Committee has been deliberate in safeguarding the interests of the national body. Their viewpoint and scope of investigation is far greater than that of any single individual and should therefore receive primary consideration. The sooner ratification by Council of the Committee's action is taken, the better for the welfare of the Journal as well as the national body. Under this view, I must vote "no" on Motion No. 28. Your truly,

C. T. P. FENNEL.

George M. Beringer writes as follows:

Camden, N. J., February 12, 1915.

Members of the Council:

Gentlemen—I have received from Mr. C. Herbert Packard his letter containing the motion seconded by Mr. LaPierre.

In no way do I intend to say anything prejudicial to Mr. Marshall. The members of the Council should be fully acquainted with the situation confronting them. The Committee on Publication have not acted at all hastily nor unfairly. At the Detroit meeting, their report was accepted and they were empowered to do certain things in behalf of the Association. In the discharge of one of their specific duties, they have weighed carefully the availability of the different names that have been presented for the editorship. Their decision in favor of Prof. Eberle appears to have been unanimous and without any prejudice to any of the other candidates whose good parts have been fully considered. It is exceedingly unfortunate that Mr. Marshall should have considered the action of the Committee as a personal affront and charged the Chairman of the Committee on Publication with any unfairness to him.

Mr. Packard himself testifies in no uncertain language as to the fitness of Prof. Eberle in the statement that "there is not a gentleman in the Association better equipped or one I admire greater," and thus confirms the judgment of the Committee.

With no desire to be unfair to Mr. Marshall, the Committee must recognize its responsibility and its duty and, the duty of the Council likewise, to be entirely fair to Prof. Eberle. The latter gentlemen became a candidate for this office at the solicitation of members of the Committee on Publication who considered him to be especially fitted for this undertaking. After due consideration of the suggestion made to him at Detroit, he became a candidate and, doubtless, has severed other connections to take up this work at the time agreed upon with the Committee on Publication.

Prof. Eberle has acted in a loyal and gentlemanly way throughout this entire matter, and I feel that it is but due to him that there should be no uncertainty as to the termination of this question nor as to the loyal support of the membership of the Association to him as Editor. Without unnecessary delay, the Council should settle this question as a business proposition that has been properly placed before the body that is empowered to transact the business for the Association. Yours very truly,

GEORGE M. BERINGER.

Frederick T. Gordon writes as follows:

February 20, 1915.

To the Members of the Council:

Gentlemen—There has been some question about the ratification by the Council of the election of Eugene G. Eberle to the office of Editor of the Journal.

Prof. Eberle was the unanimous choice of the Committee on Publication for this very important position. A movement has been started to discredit the unanimous report of the Committee by substituting the name of E. C. Marshall for that of E. G. Eberle.

It seems to me that unless charges can be preferred or any evidence of unfitness on the part of Mr. Eberle to serve as Editor can be adduced, the members of the Council should uphold and approve the unanimous vote of the Committee in favor of Mr. Eberle, especially as the original motion on which the power of the Committee rests, reads as follows:

> "That the matter of selecting an Editor be left to the Committee on Publication with power to act, subject to the approval of the Council." (Journ. A. Ph. A., 1914, 1397).

It should be noted that *the Council has no power in the matter of selecting an Editor except to ratify the action of the Committee on Publication since the Committee was made the legal agent of the Council with special power conferred upon it.*

In my judgment, the Packard motion to elect Mr. Marshall Editor is clearly out of order, parliamentarily; the nomination or recommendation should have been submitted to the Committee on Publication, and then, if approved by the Committee, acted upon by the Council, in accordance with the decision of the Detroit Convention.

The Committee on Publication would be entirely justified in standing on its rights in this matter, but it is, apparently, willing to waive them and give Mr. Marshall his "day in court," if the issue can be settled quickly by the Council. There has been already too much delay and dilatory tactics. The present condition of unsettled affairs cannot be maintained without injury to the Association, and the sooner Prof. Eberle is elected Editor of the Journal the better.

If Mr. Marshall succeeds, however, in influencing a sufficient number of the Council members to reject the vote of the Committee on Publication, then the Council will be in the position of discrediting a Committee especially ordered to nominate an Editor; and such action will discredit, not only the Council and the Association, but also, the whole work of Eugene G. Eberle, who has served the A. Ph. A. so ably as President, and as Chairman of the Council since 1912. This work has been done without pay and at much personal sacrifice. Further, as Editor of the Southern Pharmaceutical Journal he will be placed in a most embarrassing position. He would be thoroughly justified to protect his own honor by sending in his own resignation as a member of the A. Ph. A.

I earnestly trust that the Council will vote down the Packard-LaPierre motion.

Very truly yours,

FREDERICK T. GORDON.

Do you favor the motion that E. C. Marshall be elected Editor of the Journal of the American Pharmaceutical Association, as made by C. Herbert Packard, and sec-

onded by Elie H. LaPierre. This will be regarded as *Motion No. 30 (Election of E. C. Marshall as Editor of the Journal)*.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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COUNCIL LETTER No. 18.

Philadelphia, Pa., March 4, 1915.

To the Members of the Council:

Motion No. 30 (Election of E. C. Marshall as Editor of the Journal), a substitute motion for the Mayo-Engelhardt motion of January 6, has not been carried.

The results of the vote on this motion are as follows:

Yes—Messrs. Packard, LaPierre and White—3.

No—Messrs. Beringer, C. E. Carpari, Claus, Day, Diehl, Engelhardt, England, Fennel, Gietner, Godbold, Godding, Gordon, Hensel, Hilton, Hopp, McElhenie, Osseward, Rogers, Sayre, Seltzer, Stewart, Whelpley, Wilkerson and Wulling—24

Not voting—Messrs. Eberle, Alpers, C. Caspari, Jr., Clark, Freericks, Havenhill, Hynson, Kauffman, Koch, Mayo, Schafer, Schneider, Thiesing and Wilbert—14.

The vote will now be taken on the motion of C. A. Mayo, seconded by H. Engelhardt, of January 6, which is as follows:

Motion No. 31 (Election of E. G. Eberle as Editor of the Journal). Moved by C. A. Mayo, seconded by H. Engelhardt, that the action of the Committee on Publication in the selection of Eugene G. Eberle as Editor and Advertising Manager of the Journal of the American Pharmaceutical Association, as reported in Council Letter No. 13, be ratified by the Council.

The following communication has been received:

Dallas, Texas, February 26, 1915.

To the Members of the Council, A. Ph. A.:

It was my intention to maintain silence in the matter of electing an Editor of the Journal, and while I now deem it necessary to write, I will be very brief.

I desire every member to act, without prejudice or personal favoritism, that is, only in the interest of our Association. I have not nor will I be offended by any action any member may take, my desire is intense that the best interests of the Association should be kept in mind—to this end only, I plead with you.

I have never sought office in the Association nor asked any one to vote for me, unless yielding to the request, my application for the position of Editor be so considered. I have never made a sacrifice for the Association that I regret, and this applies to the present situation, nor will I take exception to any action the Association may take regarding myself.

I hope no one will be influenced by personal favor or prejudice. If these few lines have had such effect, forget them, let us all work for whatever promotes harmony and tends to enhance the value of our own association, for its members and pharmacy in general. So far as I am concerned, change of mind, amendments and substitute motions give no offense, and your action will not offend me.

It would be a source of keenest regret to have any one say justly that I had directly or indirectly been hurtful to the Association or that by word I might have prevented dissension and injury. Sincerely yours,

E. G. EBERLE.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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COUNCIL LETTER No. 19.

Philadelphia, Pa., March 16, 1915.

To the Members of the Council:

Motion No. 29 (Election of Members; Applications Nos. 76 to 87 inclusive) has received a majority of affirmative votes.

In re Motion No. 30, Frank H. Freericks writes:

"Please find herewith my vote on Motion No. 30, which I would ask to briefly explain: In voting "No" I do not in any manner mean to reflect upon the ability of the Acting Editor, and I would even say, that in so far as I have been able to judge the work of the Acting Editor as evidenced by the Journal issued under his direction, has been good. However, it has been my understanding right along that the Publication Committee was charged with the duty of selecting the most suitable man for the permanent Editorship, and believing the Publication Committee as a whole to be best fitted to decide upon the most suitable man, I would regard it to be distinctly wrong on my part to vote contrary to their decision and recommendation."

C. Herbert Packard writes:

"March 6, 1915.

Mr. Joseph W. England, Secretary of the Council, American Pharmaceutical Association:

Dear Mr England—I have received Council Letter No. 18 and note that my motion has lost by a great majority.

My loyalty to Mr. Marshall was due not only to a strong friendship but a belief in his ability. We of the East, Mr. Marshall's home, know him better than members of other sections and, in working for him, believed his election would not only be advantageous to him but to the Association as well. We have witnessed his work and have known of his capabilities for years.

It is now my desire, having lost after a

fair statement, to have Motion No. 31 carried unanimously for the election of Professor Eberle.

I believe I can say for Professor LaPierre, as well as for myself, that it is our earnest wish that perfect harmony and good feeling shall exist and all members of the Council work with one thought,—the best interests of the American Pharmaceutical Association.

With highest regards to you and all our members, I am, Yours very truly,

C. HERBERT PACKARD."

Motion No. 31 (Election of E. G. Eberle as Editor of the Journal, etc.) has been carried.

The results of the vote on this motion are as follows:

Yes—Messrs. Alpers, Beringer, C. E. Caspari, Clark, Claus, Day, Diehl, Engelhardt, England, Fennel, Freericks, Gietner, Godbold, Godding, Gordon, Havenhill, Hensel, Hilton, Hopp, Koch, LaPierre, McElhenie, Osseward, Packard, Rogers, Sayre, Schafer, Seltzer, Stewart, Whelpley, White, Wilbert, Wilkerson and Wulling—34.

No—Mr. Hynson—1.

Not Voting—Messrs. Eberle, Mayo, C. Caspari, Jr., Kauffman, Thiesing and Schneider—6.

Relative to Motion No. 31, H. P. Hynson writes as follows:

"In voting 'No' on Motion 31, I would like it to be placed on record that I do so, because I think the adoption of this motion would be unsound from a business standpoint and would entail imprudent obligations upon the Association, by accepting personal sacrifices from Mr. Eberle, which are not justified and which, in all probability, will be, finally, embarrassing to the Association.

I neither vote for or against Mr. Eberle, personally, nor for or against his abilities. I am, however, fully convinced that a much younger man should be selected as editor of the Journal, one who may develop with the publication and continue useful to the Association for a greater number of years than can possibly be Mr. Eberle's good fortune."

John G. Godding writes as follows:

"General Secretary Day referred to the Chairman of the Centennial Fund the application of Prof. Edw. Kremers for $100 from the fund, the amount to be used in connection with his work on the cultivation of medicinal plants and such related subjects as the curing of cultivated and wild plants.

The application has been approved by the Committee on Centennial Fund with the understanding, if granted by the Council, it is to be handled as other appropriations made by the Council."

The above application for appropriation has been approved by the Committee on Finance.

Motion No. 32 (Appropriation of $100 from Centennial Fund for Research Work on Medicinal Plants, etc.) Moved by W. B. Day, seconded by J. G. Godding, that $100 be appropriated from the Centennial Fund to Prof. Edw. Kremers for research work on medicinal plants and cultivated and wild plants.

Motion No. 33 (Applications for Membership). You are requested to vote on the following applications for membership:

No. 88. Irvin Simpson Zeluff, 75 Barrow St., New York, N. Y., rec. by Romaine Pierson and Frank L. McCartney.

No. 89. William S. Smetana, 916 Excelsior Ave., Hopkins, Minn., rec. by John F. Danck and Edw. L. Newcomb.

No. 90. Charles Edgar McConkey, Etowah, Tennessee, rec. by J. O. Burge and Wm. B. Day.

No. 91. James David Fields, Lewis Hall, University of Washington, Seattle, Wash., rec. by C. W. Johnson and Edith Hindman.

No. 92. Forrest Omo Snyder, 423 W. 60th St., Chicago, Ill., rec. by Wm. B. Day and E. N. Gathercoal.

No. 93. Frank E. Bogart, 15 Larned St., E., Detroit, Mich., rec. by Wm. A. Hall and N. H. Jones.

No. 94. Emile Frederick Krapf, 1068 Steuben St., Pittsburgh, Pa., rec. by J. A. Koch and John H. Wurdach.

No. 95. Carl Julius Goltz, P. O. Box 1273, Havana, Cuba, rec. by Jose P. Alacan and Jose Guillermo Diaz.

No. 96. Cornelius Wm. Dore, 119 Martin Ave., San Jose, Cal., rec. by J. G. Munson and N. A. Pellerame.

No. 97. John Harper Long, 2421 Dearborn St., Chicago, Ill., rec. by C. W. Patterson and M. A. Miner.

No. 98. Omar Harwell Whittington, Van Buren, Arkansas, rec. by J. H. Beal and W. B. Day.

No. 99. Milton P. Givens, Jr., 425 Franklin St., Denver, Col., rec. by W. A. Hover and F. W. Nitardy.

No. 100. Ray David Dame, Stratton, Nebraska, rec. by H. C. Newton and I. Curtis Arledge (nomination for membership and 1915 dues awarded by Professor H. C. Newton in recognition of excellent work at Creighton College of Pharmacy).

No. 101. John Philip Schaupner, 399 Linwood Ave., Detroit, Mich., rec. by N. H. Jones and A. A. Wheeler.

J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

Changes of address since March 18, 1915.

PEARSON, J. T.,
From 272 King and George Sts., Annapolis, Md.
To 272 King George St., Annapolis, Md.

VITOUS, W. J.,
From 1627 Railway Ave., N. W., Puyallup, Wash.
To Doty, Wash.

WICH, H. E.,
From 1230 W. Stricker St., Baltimore, Md.
To 1230 N. Stricker St., Baltimore, Md.

BARNES, A. H.,
From 14 Newberry St., Boston, Mass.
To residence unknown.

BLACK, P. N.,
From 5165 Penn Ave., Pittsburg, Pa.
To residence unknown.

DAVENPORT, J. S.,
From care Chief Sept., Ft. Bayard, N Mex.
To residence unknown.

FUSON, H. L.,
From Dover, Tenn.
To residence unknown.

KAEMMERER, W. F.,
From 410 S. 6th St., Columbus, Ohio.
To residence unknown.

MAYNARD, H.,
From 2nd Division U. S. A., Texas City, Texas.
To residence unknown.

REILLY, R. C.,
From Box 1609 Los Angeles, Cal
To 4201 S. Vermont, Los Angeles, Cal.

SAUVINET, C. D.,
From 672 Benton Blvd., Los Angeles, Cal.
To Ninth and Vermont, Los Angeles, Cal.

BROWN, A. E.,
From Attending Surgeon's Office, Hdqs. Phil. Dept., 17 Nebraska, Manila, P. I. (Estado Mayor.)
To Sept. 1st Cl. Hosp. Corps. Recruit Depot, Ft. McDowell, Cal.

BECK, JOSEPH W.,
From Winfield, Texas
To Mt. Vernon, Texas.

FISCHNAR, J. F.,
From 6859 Wentworth Ave., Chicago, Ill.
To 6901 Wentworth Ave., Chicago, Ill.

DEJONGE, CORNELIUS,
From 23 Vine St., Brooklyn, N. Y.
To 584 E. 7th St., Brooklyn, N. Y.

LAMAR, WM. R.,
From 364 N. 7th St., Newark, N. J.
To 327 N. 18th St., East Orange, N. J.

MEAD, HAROLD B.,
From 4822 N. Warnock St., Philadelphia, Pa.
To 110 Greenwood Ave., Wyncote, Pa.

SHNITTER, ADOLF,
From 1239 Boston Road, N. Y.
To 1230 Boston Road, Bronx, N. Y., N. Y.

COLSON, H. W.,
From 5755 Sangamon St., Chicago, Ill.
To 74 E. 12th St., Chicago, Ill.

MELLOR, ALFRED,
From 2130 Mt. Vernon Ave., Philadelphia, Pa.
To 152 W. Walnut Lane, Germantown, Philadelphia, Pa.

SNYDER, A. C.,
From 13½ St. Felix St., Brooklyn, N. Y.
To 282 St. James Place, Brooklyn, N. Y.

DECEASED SINCE MARCH 18, 1915.

HANNAN, O. B., Canton, Ohio.
OSBORN, FRANK D., Davenport, Iowa.

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STATEMENT OF OWNERSHIP, MANAGEMENT, ETC.,

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Managing Editor—E. G. Eberle, Columbus, Ohio.

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Is a corporation not for profit, incorporated under U. S. Laws at Washington, D. C., and does not have a capital stock.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities, none.

(Signed) E. G. EBERLE, Editor

Sworn to and subscribed before me this 6th day of April, 1915.

(Signed) CECIL J. RANDALL,
Notary Public in and for Franklin County.
My commission expires April 15, 1915.

SAMUEL A. D. SHEPPARD

TREASURER AMERICAN PHARMACEUTICAL ASSOCIATION

1886—1908



Samuel A. D. Sheppard
Elected Honorary President of
The American Pharmaceutical Association
in 1908.

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The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

Samuel A. D. Sheppard

(Doctor of Pharmacy.)

In conferring the honorary degree of Doctor of Pharmacy on Mr. S. A. D. Sheppard, the Massachusetts College of Pharmacy has paid a deserved tribute to one of the most highly esteemed American pharmacists. The honor was bestowed in recognition of his distinguished services to pharmacy; the ceremony occurred as a part of the commencement exercises held May 20, 1915.

This is only the second time in the history of the Massachusetts College of Pharmacy that an honorary degree has been conferred, hence expresses the high regard of that institution for Mr. Sheppard. Many pharmacists of this country will be pleased that such acknowledgment has been made, and none more than members of the American Pharmaceutical Association.

Mr. Sheppard was an active worker for the advancement of pharmacy for more than two score of years before his health failed. He has held many positions of responsibility and honor in national and state pharmaceutical associations, never sparing himself, nor his time, nor his means, when need arose. He joined the American Pharmaceutical Association in 1865; in 1875 he served as local secretary for the Boston meeting of that year; in 1876 he was elected First Vice-President; he was a member of the first council of the Association in 1880 and chairman of the finance committee. In 1886 he was elected Treasurer of the Association and filled this office for twenty-two consecutive years; and in 1908 he was elected Honorary President.

Many other pharmaceutical associations have shared the benefits of his work. He was a charter member of the Boston Druggists' Association, the first President of the Massachusetts State Pharmaceutical Association, a member of the first State Board of Pharmacy of Massachusetts, a trustee, treasurer and president of the Massachusetts College of Pharmacy, and, a few years ago, he presented his large and valuable collection of pharmacopœias and dispensatories of all nations to that college.

Contributed and Selected

SYNTHESIS OF GLUCOSIDES.*

H. ENGELHARDT, PH. D.



Glucosides occur very abundantly in the vegetable kingdom. They have the properties of being hydrolyzed by the action of dilute acids, dilute alkalies, enzymes and at times even by heating with water. They are converted into dextrose and other sugars and into substances of more or less complex constitution.

The glucosides are generally present in the assimilation organs of the plants, i. e., the leaves; very rarely are they found in the reserve organs, the rhizomes or the seeds. Most of the glucosides contain only carbon, hydrogen and oxygen; only a few, such as amygdalin, solanin, etc., contain nitrogen or, like myronic acid and sinalbin, sulphur. Chemically the glucosides must be considered as ester-like compounds of sugars, mostly dextrose. The sugars, however, are not pre-existent in the glucosides but are formed from them by hydrolysis, that is by taking up the elements of water. The amount of water taken up varies considerably. Thus: Salicin takes up one molecule, populin takes up two molecules, hesperidin takes up three molecules, helleborin takes up four molecules, jalapin takes five molecules, sinigrin takes up seven molecules, etc.

For isolating the glucosides no general process can be given on account of the ease with which they are hydrolized. Strong mineral acids and strong basic compounds should be avoided in the manufacturing process as well as prolonged boiling. If the drugs containing the glucosides also contain a hydrolyzing ferment the latter should first be eliminated. This can be done by treating the dried powdered drug with boiling alcohol which contains a small amount of calcium carbonate in order to neutralize any free vegetable acid, and continuing the heating for about one hour. After cooling the liquid is filtered, the alcohol is evaporated at moderate heat or preferably in a vacuum, and from the thick alcoholic residue the glucoside is extracted by boiling with neutral acetic ether; or the alcoholic extract is dissolved in water in the presence of small amounts of calcium carbonate, the solution is filtered and the filtrate evaporated under diminished pressure. The residue is then extracted with alcohol, acetic ether, acetone or other suitable solvents and the resulting solutions allowed to crystallize. At times it is necessary to defecate the alcoholic extract by carefully adding lead acetate solution. The precipitate, thus produced, is then removed by

* Read before Baltimore Branch, A. Ph. A., April Meeting

filtration, the filtrate is deprived of the lead by hydrogen sulphide gas and the glucoside is allowed to crystallize at moderate heat.

The substances which are produced when hydrolizing glucosides are chiefly hydroxyl compounds (phenols, alcohols, aldehydes, acids) both of the aliphatic and of the aromatic series. About the constitution of these products very little is known at the present time and therefore only few of the glucosides occurring in nature could be synthesized. It was possible, however, to combine alcohols, mercaptols, phenols, etc., directly with dextrose.

Since glucosides contrary to dextrose do not act directly with phenylhydrazine with the formation of osazones, do not reduce Fehling's solution or ammoniacal silver solution, they cannot contain the aldehyde group peculiar to dextrose. They, therefore, can be compared with cane sugar and with the simplest synthetic glucosides—methyl- and ethyl-glucoside.

The glucosides are solid, non-volatile, generally crystallizable compounds which are soluble in water and alcohol with neutral reaction. The enzymes act in a very peculiar way on the glucosides. For instance, emulsin hydrolyzes amygdalin, salicin, esculin, coniferin, etc., but not sinigrin. The enzymes from yeast hydrolyze amygdalin with the formation of amygdonitril glucoside and one molecule of dextrose. Emulsin, however, hydrolyzes amygdalin completely with the formation of two molecules of dextrose and one molecule of benzaldehyde-hydrocyanic acid. The full activity of emulsin obtained from almonds can only be properly explained by assuming the presence of a number of enzymes, none of which, however, so far has been isolated from it. One of these, beta-glucosidase hydrolyzes certain glucosides, another lactase, acts on lactose, a third one, beta-galactosidase, acts on certain galactosides, a fourth one, gentiobiase, acts on gentiobiose, etc.

Notwithstanding our extensive knowledge concerning the hydrolysis of the various glucosides and of the action of the various enzymes up to the present time, as already mentioned, only very few of the glucosides found in nature have been prepared synthetically.

The first attempts to synthesize glucosides were made by Schuetzenberger (Ann. d. Chem. u. Pharm. CLX, 95) who tried to obtain salicin by the action of triacetyl-dextrose and saligenin sodium. He obtained, however, a substance which was not identical with salicin but which on hydrolyzing with diluted sulphuric acid yielded glucose and saliretin. Later on Michael (Ber. Deutsch. Chem. Ges., 1881, 2097) succeeded in obtaining compounds of dextrose with phenols which behaved exactly like the natural glucosides. The formation of these substances depended on the interaction of acetochlorohydrose or acetrobromohydrose and the alkali salts of phenols. For instance, starting from these substances and salicylaldehyde potassium he obtained helicin and acetic ether. Helicin, which can be obtained from salicin by careful oxidation, therefore was the first natural glucoside produced synthetically. From this comparatively simple glucoside Fisher and Kees (Ber. Deutsch. Chem. Ges., 1885, 1953 and 3481) succeeded in obtaining synthetically the more complex orthocumaraldehyde glucoside. Schiff (Ann. CCXXIV, 19) then tried to produce glucosides by allowing aldehydes and ketones to act on sugar in acetic acid solution. The substances thus obtained were very hygroscopic and were hydrolized already by

water. Emil Fisher (Ber. Deutsch. Chem. Ges., 1893, 2928) finally succeeded in synthesizing glucosides by conducting hydrochloric acid gas into a solution of dextrose in methyl alcohol. The mixture soon lost its property to reduce Fehling's solution and a crystalline product of the composition $C_6H_{11}O_6.CH_3$ which behaved like a natural glucoside and which has been named methyl glucoside was obtained. This process was later on improved by Fisher (Ber. Deutsch. Chem. Ges., 1895, 1145) by using instead of strong hydrochloric acid only very diluted acid and accelerating the reaction with the aid of heat. The dextrose was dissolved in five times its quantity of methyl alcohol which contained only .25 percent of hydrochloric acid and was heated for 50 hours at 100° or until the liquid no longer reduced Fehling's solution. By this process he was able to methylize fructose and sorbose and also to condense these sugars with ketones which could not be done when strong hydrochloric acid was employed. In a similar manner he succeeded in condensing sugars with mercaptanes, etc.

In 1898 A. C. Hill (Proc. Chem. Soc., 1898, 156), noticed that when bottom fermentation yeast prepared and purified by a special process was allowed to act on maltose, the hydrolysis could be carried out only to a certain point, and further that under certain conditions a reconstruction of the maltose apparently took place. This observation was also noticed by several other investigators but it was not until about three or four years ago that Bourquelot and his associates and pupils could prove that enzymes which hydrolyze glucosides can reconstruct them from the products of hydrolysis under certain conditions and further that by the action of enzymes glucosides can be formed, in other words, that enzymes exhibit both a hydrolyzing and synthesizing action. Further that the same enzyme can both hydrolyze and synthesize and that the action is not due to two ferments existing side by side in the same enzymes.

Bourquelot found that while preparing tinctures from certain vegetable drugs with strong alcohol changes take place during the manufacturing process, which could be due only to the action of enzymes, which apparently are not killed by strong alcohols as is generally accepted. Together with Bridel (Journal. Pharm. Chim., 1911, II, 385) he found that emulsin acts hydrolyzing on gentiopicrine in the presence of strong alcohol although the enzyme is not soluble in alcohols of a strength higher than 60 percent. The same holds good for invertase, which is also very resistent against alcohol.

While some enzymes resist the destructive action of ethyl alcohol quite well, they are comparatively easily destroyed by other alcohols. Thus for instance, by dilute methyl alcohol containing 34 to 36 percent by weight of the alcohol, normal propyl alcohol containing 20 to 22 gms. of the alcohol, butyl alcohol containing 6 to 8 percent by weight of alcohol. Bourquelot and Bridel (Journ. Pharm. Chim., 1912) later on found that emulsin not only hydrolyzes but synthesizes and that other enzymes have similar properties. Bourquelot and Bridel (Journ. Pharm. Chim., 1912, 569) then attempted to synthesize salicin from solutions of saligenin and dextrose in 85 percent alcohol in the presence of emulsin, but only betamethyl glucoside was obtained. (Previously they had found that in aqueous solution the hydrolysis of salicin with emulsin ceases when 54.7 percent of salicin had been hydrolyzed.)

Bourquelot soon succeeded in synthesizing quite a number of glucosides, starting from methyl alcohol, ethyl alcohol, butyl alcohol, isobutyl alcohol, geranyl alcohol, etc., and also from some alcohols of the aromatic series, benzyl alcohol, phenylethyl alcohol, cinnamyl alcohol, naphthyl alcohol, etc. (Bourquelot and Bridel, Compt. rend. CLVI, 827). Almost all the glucosides, thus prepared, crystallized quite readily. The beta-geranyl glucoside which Bourquelot and Bridel obtained (Jour. Pharm. Chimie., 1913, 209) was found to be identical in every respect with the glucoside present in pelargonium odoratissimum.

Glucosides of solid water-insoluble alcohols may be prepared by using acetone as a solvent and varying quantities of water. Bourquelot further found that primary alcohols are converted into glucosides more readily than secondary, and the latter more readily than tertiary alcohols. All substances containing alcoholic hydroxyl groups form glucosides with dextrose in the presence of emulsin. The compounds obtained are beta-glucosides, and like natural glucosides are levorotatory and hydrolyzable by emulsin. It would be beyond the scope of this paper to relate in detail the excellent work carried out by Bourquelot and therefore only a few more synthesized glucosides may be mentioned. α alcohol-glucosides are prepared by allowing the enzyme α glucosidase present in bottom-fermentation yeast to act on dextrose in alcoholic solutions. The alcoholic strength of the liquid should be weaker than that used for synthesizing β glucosides with emulsin. These α glucosides are dextrorotatory and are not hydrolyzed with emulsin.

When emulsin is allowed to act on galactose in alcoholic solution β ethyl galactoside is formed by the β glucosidase present in emulsin.(Bourquelot and Mougne, Journ. Pharm. Chim., 1914, 157.) Analogous glucosides were obtained when using methyl, benzyl, etc., alcohols.

That some enzymes act synthetically in aqueous solution was shown by allowing emulsin of almonds to act upon a concentrated solution of dextrose at ordinary temperature in the presence of thymol, phenol, etc. (Bourquelot, Herissey and Coirre, Compt. Rend. CLVI, 752.) After allowing to stand for some time the solution was heated to destroy the enzymes, diluted and the undecomposed dextrose was destroyed by fermentation with top fermentation yeast. From the solution thus obtained gentiabiose in pure state could be isolated.

The synthesizing of glucosides is a rather tedious and time-consuming process. For instance, in order to prepare β methyl glucoside, 12 gms. of emulsin are added to a solution of 600 gms. of dextrose in 1020 gms. of methyl alcohol and 440 gms. of water; after allowing the mixture to stand for one month at ordinary temperature about 350 gms. of crude glucoside was obtained which when purified yielded 250 gms. of pure product.

A few words may be said in regard to the reversibility of enzyme action. If a methyl alcoholic solution containing dextrose and β methyl glucoside is treated with emulsin, a state of equilibrium of the synthesizing and hydrolyzing action of the enzyme is obtained. (Bourquelot and Bridel, Compt. rend. CLVI, 957.) When this equilibrium has been attained, further synthesis can be induced by the addition of sugar and on the other hand further hydrolysis may be promoted by the removal of sugar (Bourquelot and Bridel, Compt. rend. CLVIII, 206).

On the strength of numerous experiments Bourquelot arrives at the following conclusions:

1. The rapidity of synthesis increases with the quantity of enzyme present.

2. The action of the enzyme is accelerated by raising the temperature provided, however, the temperature at which the enzyme is destroyed is not exceeded.

3. For equal concentrations of dextrose the proportion converted into glucoside increases with the alcoholic strength and when the latter is kept constant is increased by raising the concentrations of the dextrose up to a limit of 15 to 20 percent.

While the above experiments so far are of little practical value, inasmuch as only a few of the natural glucosides have been prepared up to the present time, they throw considerable light on the chemical changes going on in plant life. The better known enzymes will therefore become a valuable guide in the study of chemistry in the living organism. As long as we only knew that enzymes have a hydrolyzing action on glucosides, they could only be used for detecting glucosides and polysaccharites in plants. Now, since we know, that they have a synthesizing action also, the results obtained by hydrolysis can be verified by those obtained by synthesis. Dextrose is present in all plants. When therefore a plant contains a ferment it points to the presence of the corresponding glucoside. This has been verified in the ericaceæ, the gentians and quite recently in various orchidaceæ. Also in many species of the scrophulariaceæ, especially of the genus linaria, in leguminosæ, proteaceæ, etc. On account of their specific action the enzymes will gradually become the most delicate and certain reagents for the study of the constitution of certain organic compounds. In plant physiology biochemical synthesis is an important factor in the production of food materials. Certain organic compounds which are insoluble in water, form with dextrose soluble compounds. Since dextrose is present in all living organisms it seems to be the best liquifying agent under certain conditions and seems to prevent the formation of certain concretions and to dispose of compounds dangerous to the organism of the plant.

On the other hand the reversibility insures the maintenance of the equilibria necessary for life. In organisms where life is active the liquid media are particularly favorable to hydrolysis, i. e., to the utilization of food materials. In reserve organs, for instance the seeds, the medium becoming gradually less aqueous, is more favorable to synthetic processes. (Bourquelot, Journ. Pharm. Chim., 1914, 361 and 393.)

Whenever the chemical constitution of the products of hydrolysis of natural glucosides shall have been established we shall, without doubt, be in a position to produce such glucosides synthetically.

HYDROGENATED OILS.*

ANDREW CAMPBELL.

Broadly speaking, the chemical combinations presented in fixed oils and fats are glycerides of various fatty acids. The formulæ of these characteristic acids, again broadly speaking, differ from one another principally in the number of the contained hydrogen atoms, while the physical properties of the various oils seem to be dependent upon the underlying character and proportions of these acids.

Oleic and stearic acids are the most commonly presented of these substances and the physical difference caused by these two constituents is largely manifested in that oleic acid combinations give oils and fats of soft or liquid consistency while stearic acid, as a rule, is characteristic of the harder fats.

The chemical formula recognized for oleic acid is $C_{18}H_{34}O_2$, while that for stearic acid is $C_{18}H_{36}O_2$. Two hydrogen atoms, then, added to oleic acid will transform it into stearic acid. It has long been apparent that such a transformation, if it could be economically accomplished, would be of great commercial importance. The purely chemical possibility of this step was long ago demonstrated, but it has only been within recent years that practical processes, workable under commercial conditions have been devised for carrying out this chemical transformation of oleic into stearic acid or of olein and its related substances into stearin and similar bodies. It might be remarked in passing that this exact problem is very neatly solved in the economy of nature when the steer, fattened, say, on cottonseed meal, gives us tallow and oleo-stearin, but owing to the wastefulness of this process, the modern oil-chemist by his direct methods may well claim to outdo the steer.

The essential feature of all the modern hardening processes is to bring about intimate contact between the oil under treatment and gaseous hydrogen in the presence of a third substance known as a catalyzer. Numerous catalyzers have been proposed, but finely divided metallic nickel is probably the most typical. A great variety is also shown in the forms of apparatus devised for the accomplishment of the process, many of which have been the subjects of patents.

The two greatest apparent fields of usefulness for such a process seem to be the production of edible fats and the bringing into range of soap-making materials vegetable and animal oils which have hitherto been unavailable on account of the relative softness of their products or for certain other technical reasons. Hardened oils will probably find other wide uses in the arts, for example in the manufacture of lubricants, but for the present the production of edible fats and of soap-making materials is of paramount importance in the development of the process.

Two seemingly contradictory statements may be made in regard to hydrogenated oils. One is that their production is quite simple and can be carried out without elaborate or expensive apparatus and the other is that commercial success can be

* Read before the Pittsburgh Branch, A.·Ph. A.

attained only in rather expensive and well-equipped plants. The necessary supply and handling of hydrogen at a reasonable cost are the controlling factors of such a situation.

In the simplest form of apparatus provision only need be made for carrying a stream of hydrogen through the oil in the presence of the catalyzer at a slightly elevated temperature. On the other hand, some of the most complex and elaborate forms of apparatus have been designed and patented in great variety with a view to making the process commercially efficient.

As to catalyzers, metallic nickel seems to be most favored, but palladium is well regarded and platinum, iron and copper have been used. Oxides of these same metals have also been exploited as suitable catalyzers and one of the inventors in the line has patented the use of various organic salts of similar metallic elements. A great variety of schemes have been tried for making the catalyst not by itself but deposited in a fine state of division on the surface of some inert carrying substance. Pumice stone, kieselguhr, charcoal and sawdust have all been used. The production of a good catalyzer requires considerable care and technical skill. In the case of nickel the steps are precipitation of a nickel nitrate solution by means of alkali and the subsequent reduction of the precipitated hydroxide by heating in a current of hydrogen. Particular care is needed in controlling the temperature of the reduction process. Protection from air and moisture is required after reduction and the catalyzers are subject to the peculiar fact that the presence of even very small amounts of chlorine and sulphides greatly depreciates their activity. This is spoken of as "poisoning" the catalyzer.

Inasmuch as the hardening process is only an application of previously known chemical reactions, no basic patents can be sustained on it. Consequently we find that the many patents issued in connection with the matter fall naturally into two classes, those on particular catalyzers and the methods for producing the same and those on apparatus and devices for carrying out the general process. The catalyzer patents are of the most importance and one firm of English soap-makers, Crossfield & Sons, seems to have made some attempt at monopoly, having acquired the patents on nickel, palladium and platinum. Such an attempt, however, would not seem to be effective since numerous other patents have been issued for the oxides and the Wimmer patents cover the use of organic salts. The oxide patents are mostly held by the combination known in the trade as the Bedford-Erdman-Williams interests. Then, too, one process has been devised which dispenses entirely with catalyzers and carries out the hydrogenation by the application of hydrogen alone but at comparatively high pressures.

A great variety of fatty oils may be treated with a view to increasing their economic usefulness. The most important, on account of the utility of their hardened products, are the liquid vegetable oils such as cottonseed, corn, sesame, castor and linseed oils and the marine animal oils such as menhaden, fish and whale oils. Cottonseed oil has been the principal product under exploitation, although much work has been done abroad on fish and whale oils. Hardened cottonseed oil yields products of use in the manufacture of lard compounds and butter substitutes and the hardened train oils are equal or superior to the higher-priced tallows for soap makers.

The question of the safety and healthfulness of the edible products yielded by this method has been carefully investigated and no criticism can stand against them if care is used to eliminate the possible traces of metallic contamination originating from the catalyzing elements. Taste, odor and color of many of the oils are very much improved. Particularly is this true of the disagreeable odor of the marine oils which thorough treatment by hydrogenation seems absolutely to remove. As to this point it is interesting to note that the Japanese chemist, Tsujimoto, has demonstrated that the odor and taste of fish oil instead of being due to impurities, as had been supposed, are really caused by the presence of a characteristic fatty acid, clauponodonic acid, having the formula $C_{18}H_{28}O_2$, which by the addition of eight hydrogen atoms becomes stearic acid and loses its odor and taste.

Much has been reported and written about the possible wonderful cheapening of soap makers' materials, but this has been considerably exaggerted, at least for the immediate future. In Germany a perfectly odorless, white, hardened train oil has been offered on the market at 66 marks per 100 kilos, which compares with a price in the same market of 72 marks per 100 kilos for prime boiling tallow. As the process becomes better developed and more widely used very material reductions in the price of the products may be reasonably expected. As has already been indicated, no monopoly of the process is likely to be established, but on the other hand it will not be available for small fat and soap industries, on their own premises, largely on account of the expense necessary to secure the requisite supply of hydrogen at an economical price.

Factories have been established for working the process in Germany and England, while recently a Norwegian-German company has built a factory at Friedrichstad, utilizing the water-power of Hafslund Falls for the electricity needed in the works and for the production of hydrogen by the electrolytic method. This factory is expected to utilize about 300 barrels of oil daily. So far as I am aware, but one commercial project on any considerable scale has been attempted in this line in the United States. This is located at Ivorydale, Ohio, and operates under the name of the American Oil Treating and Hardening Company. A close connection with one of the large soap manufacturing concerns would seem to be indicated, but both edible and inedible hardened fats are advertised and offered by this company.

It is one of the striking facts of modern industry that so large and important developments should proceed from the utilization of such a simple and apparent chemical reaction. One is lead to a remark, which while trite is exceedingly apropos, that only the merest surface of the broad field of chemical invention has thus far been touched, and in spite of all the accomplishments of the past fifty or one hundred years, the future holds most wonderful prospects for development and achievement in chemistry. It is equally true that it is not always the abstruse and complex in chemistry that holds out the greatest possibilities, but frequently some very simple reaction carries the secret of a new industry.

THE ROLE OF ENZYMES IN CHEMICAL CHANGES.*

C. H. MARYOTT, B. S., PH. D.

Formerly it was thought that the chemical changes involved in the process of living matter sprung from a special vital force, unlike any of the material forces with which we are familiar. The assumption of this vital force was a natural sequel to the lack of knowledge concerning the nature of the changes involved in the growth and decay of plant and animal structures. Later as a number of products formerly obtained only from living organisms were made in the laboratory by familiar chemical methods, the need of any special vital agent disappeared, for it was seen that many of the chemical changes occurring in nature were not essentially different from those producible in the laboratory. The beauty and mystery of the transformations of plant and animal life, however, did not thereby suffer, for it was seen that each living cell constituted a laboratory most complete and wonderfully equipped, where reaction of the most complex nature was carried out with an ease that defied imitation. A study of the means by which these reactions are accomplished, has revealed the importance of a class of substances known as enzymes, elaborated by living cells. In their action they resemble the inorganic catalyzers and conform in general to the behavior of such.

A catalyzer is a substance which by its presence alters the rate of a chemical change, without taking, of itself, a permanent part in the reaction. There are many chemical changes going on around us which proceed so slowly under ordinary conditions that they are difficult or impossible of detection within a moderate length of time. Thus cane sugar dissolved in water, very slowly reacts with the water and yields dextrose and levulose. In the presence of hydrochloric acid, or of invertase, an enzyme procured from yeast, the change takes place rapidly, and under suitable conditions might be completed within a few hours. Neither the hydrochloric acid nor the invertase would be used up during the process, but would be present in the same amount and in the same condition after the reaction as they were before it. Likewise oxygen and hydrogen when mixed, under ordinary conditions, do not combine perceptibly, but if finely divided platinum is placed in the mixture, rapid union results, which may ignite the mixture.

Besides the fact that catalyzers accelerate reactions and that they undergo no permanent change themselves, there are several characteristics generally ascribed to them. One of the most conspicuous of these is the property which they possess of effecting an amount of chemical change out of all proportion to the amount of catalyzer used, the merest trace often causing a pronounced action; colloidal platinum will cause the decomposition of 1,000,000 times its weight of hydrogen peroxide, and invertase will act upon 200,000 times its weight of sugar.

Another characteristic of catalyzers of importance in connection with enzymes is the fact that catalytic agents do not affect the conditions of equilibrium in any

* Read at a monthly meeting of Faculty and Senior Classes, Baylor University Colleges of Medicine and Pharmacy.

chemical change. There are many reactions which do not proceed to completion, but the reaction apparently stops before all of the original reacting substances are combined. Thus fats will react with water to form glycerin and free fatty acids, but the reaction will come to an apparent halt before all of the fat is transformed. Under exact conditions there will be a definite ratio between the quantities of unchanged fat and the amounts of glycerin and free acid. The explanation of this condition is that we are dealing here not with a single reaction, but with two oppositely directed reactions, and each tends to undo the effect of the other. While it is true that fat and water react to give glycerin and acid, it is equally true that the glycerin and acid react to give the original fat and water.

The relative amount of fat that will be decomposed will be determined by the conditions of temperature and the concentration of the various substances present. Inasmuch as both of these reactions are influenced to the same extent by a catalyzer, the relative amounts of the substances present when equilibrium is reached will be the same whether a catalyzer is used or not. The fact that in such reversible reactions, the catalyzers affect with reactions alike, is of great importance physiologically, for it makes it possible that under certain conditions a substance such as a fat may be broken down by an enzyme into products which can be absorbed, and under different conditions, by this same enzyme, these products can be combined again. Thus in the body the same enzyme may effect decompositions, or it may bring about syntheses.

Though the fermentation of sugar containing solutions must have been the subject of a great deal of attention in very early times, it was not until nearly the middle of the nineteenth century that the production of alcohol and carbon dioxide was associated with the activities of the yeast cells, not until after Pasteur had completed his researches on the subject was full credence given to the belief that the yeast cell was the active instrument in alcoholic fermentation. Other ferments were known previous to that time for Reaumur as far back as 1752 had discovered the gastric enzyme pepsin, and Kirchoff in 1814 discovered the diastasic properties of sprouting barley. Emulsin and many other ferments were known. The catalytic nature of these enzymes was realized, for Berzelius in 1837 had compared them to the inorganic catalyzer, and had anticipated the tremendous importance which these enzymes have on vital processes. These enzymes just mentioned were held to act in an essentially different manner from those in yeast, lactic and butyric fermentations, which Pasteur had proved took place within the living cells and which were then believed to be possible only in conjunction with the living processes of these cells. Ferments were accordingly classified into organized and unorganized ferments. This classification prevailed until 1896, when Buchner showed that the activity of the yeast cells was due to a substance, which he called zymase, which could be separated from the cellular structure and which caused the breaking down of glucose into alcohol and carbon dioxide, independently of any living matter. The term "organized ferment" lost its original significance and since then all processes of fermentation have been looked upon as due to unorganized, non-living enzymes. At present enzymes are considered as intra-cellular or extra-cellular, depending upon whether their activity takes place normally within the living cell or outside of it.

The extra-cellular enzymes, those that are excreted into a fluid external to the cell, such as the common digestive enzymes, pepsin and trypsin, are the best known. Considerable difficulty surrounds the study of the intra-cellular enzymes, for in many cases it is impossible to separate them from the cells, and their activity must be studied while within the cell structure.

In the classification of the enzymes, they are usually grouped either according to the type of chemical reaction they accelerate, or according to the nature of the substrate that they act upon. Of the various chemical changes which take place in the living world that of hydrolysis is one of the most frequent and most important. Many substances, particularly plant and animal substances, when in the presence of water, react with the water, the molecules of the substance taking up water molecules and breaking down into simpler substances. Thus a cane-sugar molecule will react with a water molecule and break down into a molecule of dextrose and one of levulose. This process is very slow unless a catalyzer is present, but in the presence of even a very small amount of invertase, it takes place rapidly. The chemical process involved in the digestion of carbohydrates, proteins, and facts, is one of hydrolysis. Enzymes which bring about rapid hydrolysis are known as hydrolytic enzymes, and are spoken of as amylolytic, proteolytic or lipolytic, according to the substance they act upon. They are also sometimes classed as amylases, proteinases and lipases, the ending *ase* being a general suffix added to the name of the substrate. There are many other important hydrolytic enzymes besides those mentioned.

The oxidizing enzymes, or oxidases, form another widely occurring and important class, as they doubtless take an essential part in life processes. Closely related to the oxidases are the catalyses and peroxidases, which are nearly everywhere present in living matter. The catalases cause liberation of oxygen from hydrogen peroxide, and the peroxidases bring about oxidations in the presence of peroxides. These last are of particular interest, inasmuch as oxidation effected by hydrogen peroxide and the peroxides as a class, seem to resemble more closely the oxidations taking place in the tissues, than does any other type of oxidation, and it is thought probable that the peroxidases play a very important role in body metabolism. Little, however, of an exact nature is known about the metabolism enzymes. Other important groups are the sugar-splitting, or glycolytic, and protein-coagulating enzymes.

So far it has been impossible to separate any enzyme in a perfectly pure form, so that little of a definite nature is known regarding their chemical characteristics. They are all soluble in water, but are insoluble in strong alcohol, chloroform, acetone and the like. Glycerin dissolves most of them but not so well as does water. As they are colloidal substances and occur associated with protein matter, any attempt to precipitate them, throws them down always contaminated with large amounts of impurities from which it is impossible to separate them, as the methods that would be required for their purification destroys their activity. It is doubtless due to their colloidal nature and the tendency they therefore have to form adsorption compounds with other colloids, that many of the intracellular enzymes cannot be separated from the cell proteins.

The activity of enzymes is very markedly affected by slight changes in temperature. If raised above a certain temperature, usually about 50° C., their ac-

tivity rapidly falls off owing to a gradual destruction of the enzyme. All enzymes if in a moist condition are destroyed by boiling, though if in a dry state they may be heated, frequently to higher temperatures.[1] Each enzyme acts best at the temperature in which it acts in nature. For plant enzymes this is about 25° C., and for animal enzymes about 40° C.

Enzymes are likewise usually very sensitive to the reaction of the medium in which they function. Some, like pepsin, act best in a faintly acid solution, others, like trypsin, in one faintly alkaline, while some act best in neutral solutions.

There is at present some disagreement regarding the extent to which the activity of enzymes is specific. Some take the view that enzymes having similar actions are the same. Accordingly there is no ground for belief that any difference exists between the ptyalin of the saliva, and the starch-splitting enzymes of the pancreas, muscle tissue, or plants. Others incline to the view that each enzyme from a different source is different and that each is limited in its action to some particular substance. Without taking such an extreme view we can with safety conclude that there is a very high degree of specificity in enzyme action. Lipases do not act upon starch, amylases do not act upon protein, neither do proteinases act upon fats. While all lipases effect the same action on fats, namely their hydrolysis into glycerin and fatty acid, they do not all act equally well under like conditions. The lipase of the stomach acts best in a slightly acid medium, that of the pancreas occurs as a zymogen and is activated by the bile.

The work of E. Fisher shows that in the case of sugar, and the polypeptides that there is an intimate relationship between the optical properties of the molecules of the substrate and the enyzme that acts upon it. He has likened the action of enzyme on a substrate to that of a key on a lock. The indications are that enzymes act only on substances having a chemical resemblance to themselves. It appears that the action of an enzyme is limited to a certain arrangement or grouping within the molecule, and a given enzyme will act only upon substances possessing this grouping.

There is much evidence that enzymes in acting upon substances first form temporary compounds with them, these subsequently break down as the substance changes, the enzyme is set free and immediately forms a new union with other molecules of the substance.

Many of the most important enzymes do not exist in the cells in an active form, but are excreted, or zymogens which require activation by the enzymes. These activating agents are called co-enzymes. Thus enterokinase activates trypsinogen and forms trypsin. There is an interesting class of substances which inhibit the action of enzymes, and are called anti-enzymes. Thus in blood serum there exists a substance which destroys the action of trypsin and is known as anti-trypsin; substances can be extracted from intestinal worms which prevent the digestive enzymes from acting. Antiferments are also developed in the blood of animals which have been injected with solutions of enzymes. Whether these anti-enzymes are true enzymes, or whether they act by forming more stable compounds with the enzymes has not been definitely settled.

The methods by which enzymes are formed and their action controlled by

[1] For behavior of enzymes at low temperatures see article by Joseph Samuel Hepburn in this issue.

the cells are not known, but they without doubt form a most important class of agents, through which the chemical operations of life are accomplished. Many of the tissues are abundantly supplied with them. Twenty or more have been shown to be present in the liver. The kidney and muscle tissue are also widely supplied with them.

Among the more familiar processes in which enzymes take a prominent part might be mentioned those of digestion. Here a certain amount of adaptation of secretion to diet seems possible. Lactase, an enzyme present in the intestine of infants, is absent or present in negligible amounts in adults, but constant feeding of lactase results in a revival of its secretion. This adaptability of secretion to diet, may have an important bearing on the ill effects frequently produced by a sudden change in the character of the diet. The oxidizing enzymes have already been mentioned in connection with metabolism. There is one anomaly which finds a probable explanation in a defective enzyme action, namely that of alkaptonuria. Tyrosin and phenyl-alanin, products derivable from protein, are normally completely oxidized in the system, but in alkapton are oxidized only partially to homogentisinic acid. Diabetes may find an explanation in the failure of the glycolytic enzymes of the tissue to oxidize glucose. The clotting of blood, the softening of tissue by pus, the destruction of germs by the leucocytes, rigor mortis, and the softening of tissue by autolysis are familiar illustrations. The formation of urea, of dextrose from glycogen and of glycogen from dextrose, the breaking down of neucleic acid in purins, and the oxidation of the purins to uric acid are other cases, which could be greatly multiplied.

THE BEHAVIOR OF ENZYMES AT LOW TEMPERATURES.*

JOSEPH SAMUEL HEPBURN, A. M., M. S., PH. D.

The influence of low temperatures on enzymes is a subject of growing importance to the chemist, the biologist, and the bromatologist. Problems in this field may be studied from either the potential or the kinetic side; for either the resistance of an enzyme to, or its activity at, low temperatures may be investigated. Various researches, conducted during the last half century, have demonstrated that enzymes survive exposure to low temperatures and also act as catalysts at such temperatures. The reports of these researches are widely scattered in the literature; and frequently the original papers may be obtained for consultation only with difficulty. It is the purpose of this paper, which is based on primary sources, to give a *resume* of our present knowledge of this subject. One section is devoted to the resistance of enzymes to low temperatures, and one to their activity at such temperatures.

* Communicated by the Author to the *Journal of the Franklin Institute*, and reprinted by permission. This contribution is based on a paper to be published by the writer in the *Biochemical Bulletin*, 1915, iv.

In this paper full details will be given of the researches of various investigators on the influence of low temperatures on enzymes, and a complete bibliography appended.

THE RESISTANCE OF ENZYMES TO LOW TEMPERATURES.

The researches reviewed below demonstrate that the following enzymes survive exposure to low temperatures and again exert their usual catalytic power when brought into a suitable environment: diastase, inulinase, invertase, maltase, zymase, lipase, protease of plants, pepsin, trypsin, thrombin, rennin, oxidase, peroxidase, catalase, simple and aldehyde reductase. This order will be followed in presenting the data.

Solutions of *diatase, inulinase,* and *invertase,* after exposure for forty-five minutes to the temperature of liquid air (approximately —191° C.), retained unaltered their power to hydrolyze starch, inulin, and sucrose, respectively. The diastase was obtained from human saliva and from *Aspergillus niger;* the inulinase from the Aspergillus; and the invertase from both the Aspergillus and beer yeast.

After yeast press juice had been repeatedly cooled to —2° C., its *maltase* retained the power to invert maltose.

Zymase in yeast press juice survives complete freezing of the juice. The enzyme may be concentrated by cooling the juice to —2° C. and removing the ice crystals from the solution of enzyme in the mother liquor. Zymase has been prepared by trituration of a mixture of solid carbon dioxide (carbon dioxide snow)[1] and dehydrated yeast cells for a period of one-half hour. It is resistant to a temperature of —182° to —190° C., that of liquid air; yeast cell plasma, held at that temperature for twenty hours, retained unchanged its power to produce alcoholic fermentation.

The *lipase* of a pig pancreas, which had been kept in cold storage at 4° C. for seven days, retained about forty percent of its power to hydrolyze ethyl butyrate. Lipase was found in fresh eggs which had been held at 0° C. for sixty-six days. It was present in the crude abdominal fat of a chicken kept at 0° C. for twenty-four hours after death, in that of chickens of known history held hard frozen for periods of twelve and one-half, thirteen, sixteen, twenty-eight, twenty-nine, and forty-two months at a temperature of —9.4° to —12.2° C., and in that of birds, whose history prior to freezing was unknown, kept at that temperature for periods of fifty-four and eighty-nine months.

The *protease* of plants survives freezing temperatures. Sprouting wheat seedlings, excoriated peas, excoriated germinating peas, etiolated caulis tops, etiolated leaves and green leaves of the bean *Vicia faba* were frozen, usually for twenty-four hours. Their proteases were still able to produce autolysis of the tissue proteins at room temperature.

Solutions of *pepsin* and *trypsin,* after exposure to the temperature of liquid air (approximately —191° C.) for forty-five minutes, were practically unaltered in their ability to digest albumin.

The clotting enzymes *thrombin* and *rennin* likewise survive exposure to the temperature of liquid air. Thombin of dog's blood held at —180° C. for thirteen minutes retained in full its power to produce clotting of the blood.

Commercial rennet, kept at —180° C. for periods of one, five, ten, and thirty

[1] The temperature of solid carbon dioxide vaporizing at ordinary atmospheric pressure is approximately —75° C. (Richter *Inorganic Chemistry,* Fifth American Edition, p. 228.)

minutes, was entirely unchanged in its action on milk at 35° C. In another experiment a rennin solution, which was kept in boiling liquid air for over one hour, retained completely its power to produce clotting of milk.

Oxidase was present in milk held at 0° C. for as long as thirty-five days, and in cream held at that temperature for as long as twenty-eight days. Both milk and cream were rendered bacteriologically sterile by addition of 0.1 percent of formaldehyde before storage.

Both oxidase and *peroxidase* were found in the crude fat of a chicken kept at 0° C. for fifteen days after death, and in that of hard-frozen chickens, including birds of known history, kept in the freezer for nine months and birds, whose history prior to freezing was unknown, held in the freezer for periods of twenty-three and sixty-three months; the temperature of holding was —9.4° to 12.2° C.

Catalase has been found in milk and cream rendered sterile by addition of 0.1 per cent of formaldehyde and held at 0° C. for twenty-one days. It has also been detected in eggs, including both the white and the yolk, after the eggs had been kept at 0° C. for sixty-five days.

Catalase has also been demonstrated in the crude fat of chickens of known history held hard-frozen for nine months at a temperature of —9.4° to —12.2° C., in sole kept frozen for nineteen to twenty-one days at —2° to —9.5° C., and in cod kept frozen for thirty days at —2° to —6.5° C.

Simple reductase has been found in formalized, sterile milk and cream kept at 0° C. for twenty-eight days; the cream also contained *aldehyde reductase*.

Simple reductase occurred in the crude fat of chickens of known history held hard-frozen for nine months, and in that of chickens, whose history prior to freezing was unknown, kept in the freezer for twenty-three months. Aldehyde reductase was present in the birds of the latter class after periods of twenty-three and sixty-three months in the freezer. The temperature of holding was —9.4° to —12.2° C.

THE ACTIVITY OF ENZYMES AT LOW TEMPERATURES.

Studies have been made of the activity of the following enzymes at low temperatures: invertase, maltase, zymase, diastase, lipase, pepsin, trypsin, galactase, urease, rennin. This order will be followed in presenting the data. At times the enzyme studied was permitted to produce an autolysis, at times to act in solution on an artificial medium, at a given low temperature.

Invertase, *maltase*, and *zymase* are active at the temperature of an ice-box, for yeast press juice ferments saccharose, maltose, glucose, and fructose at that temperature.

The *diastase* of carp liver acts on starch at 0° C., converting it first into soluble starch, then into erythrodextrin, and finally destroying the latter compound.

The *lipase* of pig pancreas has been shown to hydrolyze ethyl butyrate at 0° C., and to hydrolyze neutral lard at —9° to —12° C. The lipase of pig liver splits ethyl butyrate at 0° C. and at —10° C. The lipase of crude chicken fat produces hydrolysis of ethyl acetate, butyrate, and benzoate and amyl salicylate at 0° C. and at a temperature of —6.7° to —9.4° C.

Pepsin.—The gastric protease of the frog, the pike, and the trout digests albumin at 0° C.; that of the frog also digests fibrin at 0° C., while that of the pike produces proteolysis of fibrin at temperatures as low as 0° C. Pepsin of pig's stomach converts coagulated ovalbumin into acid albumin, albumoses, and peptones at 0° C. Pepsin also digests ricin at that temperature.

Trypsin, derived from the intestinal tract of the carp, gave rise to proteolysis of gelatin and of fibrin at 0° C.

Galactase, the trypsin-like enzyme of milk, gives rise to a proteolysis in Cheddar cheese which is ripened at 15° F. (—9° C.), 25° to 30° F. (—1° to —4° C.), and 33° F. (+0.6° C.). Galactase also produces proteolysis in milk rendered sterile by addition of 0.1 percent of formaldehyde and held at 0° C. The digestion of the proteins observed in milk kept at —9° C. has been ascribed to the action of galactase.

Urease of the soy bean hydrolyzed urea at temperatures as low as 0° C.

When *rennin* acts on milk it first transforms the casein into paracasein and then precipitates the latter compound as a coagulum. The first stage of the reaction occurs at 0° C.; the second stage likewise takes place at that temperature, but the precipitate separates in a finely-divided condition without the formation of a distinct curd.

SUMMARY.

The power to survive prolonged exposure to low temperatures is possessed by various enzymes, including those producing hydrolysis of fats, of carbohydrates, and of proteins, those concerned in biochemical oxidations and reductions, the clotting enzymes and that of alcoholic fermentation. The enzymes retained their catalytic power after exposure, either *in situ* or in solution *in vitro,* to temperatures varying from a few degrees above 0° C. to the temperature of liquid air (—180° to —191° C.). The shortest periods of holding, invariably less than one day and usually less than one hour, were at the temperature of liquid air. The longest period of holding was eighty-nine months at a temperature of —9.4° to —12.2° C.

The activity of certain of these enzymes, including rennin, zymase, and those hydrolyzing fats, carbohydrates, and proteins, has been studied at low temperatures, varying from that of an ice-box to one of —9° to —12° C. While the enzymes produced autolytic digestion or acted on artificial media at these temperatures, the velocity of the reaction was always lessened to a considerable degree.

COMPARISON OF THE PHARMACOPŒIAL METHODS FOR THE DIGESTIVE FERMENTS AND ANIMAL PRODUCTS ADOPTED BY THE DIFFERENT COUNTRIES.*

HOWARD T. GRABER.

In January, 1817, Dr. Lyman Spalding of New York City, submitted to the Medical Society of the County of New York, a project for the formation of a National Pharmacopœia, and on December 15, 1820, the first issue of this national volume was published in Boston, in both Latin and English. There have been eight revisions since this first volume appeared, and the present book stands pre-eminent as a national standard, having been adopted by the United States Department of Agriculture.

Section 7 of the Food and Drugs Act of June 30, 1906, states: "In the case of drugs, if where a drug is sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as determined by the test laid down in the United States Pharmacopœia or National Formulary, official at the time of investigation, it is deemed to be adulterated unless said difference is plainly stated on the label." Nor is the United States alone in its publication of such an official standard; indeed, each nation has its own standard volume. In France they have the French Codex, in Germany the Arzneibuch, in Japan the Japanese Pharmacopœia, and in England and her colonies the British Pharmacopœia, etc.

I shall not attempt a general comparison of these various books, but will confine myself to the requirements of the various governments for the standardization of the digestive ferments and animal products.

The digestive ferments which have received almost universal recognition are pepsin, pancreatin and diastase, and of the allied animal products desiccated thyroid glands, oxgall, both pilular and purified, and peptone have been recognized.

PEPSIN.

Taking up the consideration of the enzyme pepsin, it is found that three nations, namely, the United States, Germany and Japan, evaluate the proteolytic value of this ferment by its digestion on boiled egg albumen; the country utilizing a different proteid being France, which has adopted as a proteid, washed fibrin from pig's blood, strained by hand and desiccated at 40° C., either in a warm closet or in a draught of warm air, then pulverized.

The official strengths vary from 1:400 to 1:3000, and the time of digestion from two to six hours.

The following chart illustrates the essential details of the various tests:

* Read before the Detroit Section of the American Chemical Society.

Country	Pepsin gm.	PROTEID: Egg Albumen: Boiled	PROTEID: Egg Albumen: Amount	PROTEID: Egg Albumen: Texture	Des. Fibrin Amount	Media for Digestion	Time Digested	Temperature	Official Strength	When	Kind Official	Animal Used
U. S. A.	.00333+ gm.	15 min.	10 gms.	Through No. 40 sieve		40 cc. .3% HCl	2½ hours	52° C.	1:3000	Insoluble residue after standing ½ hour does not measure more than 1 cc.	Scale, Grain or Powder	Pig
An Essence of Pepsin N. F., each fluid drachm of which contains 1 grain of 1:3800 Pepsin												
England	.005 gm.	15 min.	12.5 gms.	12 meshes to cm. No. 4		125 cc. .2% HCl	6 hours	40½° C.	1:2500	Only a few small flakes remaining	Grains, Scales, Powder	Pig, sheep or calf
Glycerin of Pepsin, each fluid drachm of which contains 5 grams of official Pepsin												
Germany	0.1 gm. Mixture made by mixing 65 parts by weight of Pepsin and 935 parts by weight of Sugar, pure	10 min.	10 gms.	No. 60 sieve		100.5 cc. .2% HCl	1 hour	45° C.	1:4000 (U. S. P.) 1:1535	Albumen must have dissolved	Saccharated	
Japan	0.1 gm.	About 6 min.	10 gms.	No. 4		100.5 cc. .15% HCl	2 hours	45° C.	1:600 (U. S. P.) 1:100 (J. P.)	Albumen almost completely digested. Moisture not over .5%. Ash not over .5%	Saccharated only	Hog or cattle
France	0.1 gm.			Pulverized	2½ gm. Desiccated pig Fibrin	60 grams .256% HCl	6 hours	50° C.	1:3000 (U. S. P.) 1:600 France	10 cc. of the cold and filtered digested solution should not at the ordinary temperature become cloudy by the addition of 20 drops of HNO_3 (sp. grv. 1.394 @ 15° C.)	Thick paste, powder or scales Amylaceous and Lactated Pepsin	

As to the general physical characters, they all agree that the pepsin should be soluble in water and also alcohol of 20 to 30 percent strength and insoluble in strong alcohol.

PANCREATIN.

Pancreatin, the second enzyme to be considered, is as the name implies, a mixture of the enzymes naturally existing in the pancreas of warm-blooded animals and consisting principally of amylopsin, trypsin, steapsin and myopsin. Of this mixture amylopsin, or the starch digester, and trypsin, or the pancreatic proteolytic ferment, are the only two enzymes which are officially standardized; and the same difference is noted with the methods adopted for trypsin as for pepsin, namely, three of the countries under discussion have adopted cow's milk as the medium for tryptic estimation, while one, France, uses the desiccated blood fibrin from pig's blood.

The chart on the next page illustrates the official methods for determining the tryptic value of a pancreatic product.

Of the animal products recognized are oxgall and thyroid glands; with peptone official in the French Codex only:

OX GALL PURIFIED.

Country	Description	Character of Product	Odor	Taste	Official Tests and Requirements Should be
U. S. A.	Evaporated Gall of Ox	Yellowish Granular soft solid	Peculiar	Partly bitter. Partly sweet.	Completely soluble in water. Completely soluble in 94% alc. Completely soluble in 50% alc. Sulphuric acid identification test.
England	Evaporated Ox Gall	Yellowish Granular Hygroscopic substance	Peculiar	Partly sweet. Partly bitter.	Completely soluble in 90% alc. and water. Also aqueous soln. gives no precipitate upon the addition of 90% alcohol. Usual H_2SO_4 identification test.
Japan	Evaporated Ox Gall				No official purified product. A crude evaporated gall is official with an ash requirement of 8.10% solid residue.
Germany					No official product.
France					No official product.

DESICCATED THYROID GLAND.

Country	Animal	Character	% Composition	Ash	Standard Requirements
U. S. A.	Sheep	Yellowish Amorphous Powder	1 part represents approximately 5 parts of fresh gland	Not over 6%	Qualitative test for presence of organic Iodine, also absence of inorganic Iodine (9th Revision — .17 — .22% Iodine)
British	Sheep	Light dull brown powder. Pinkish turbid liquid	100 minims, or 6 cc., represents 1 entire gland		
Japan					No official product
France					No official product.
Germany					No official product

PANCREATIN—TRYPSIN ESTIMATION.

Country	Official Product	Amount Enzyme gms.	Amount $NaHCO_2$ gms.	Dissolved in	Amount Milk	Digested at	Time Digested	Requirement to be Official
U. S. A.	Powder	.28	1.5	100 cc. Tepid water	400 cc.	38° C.	30 mins.	Small portion mixed with three times its volume of water and some Nitric acid added should produce no coagulation.
England	Liquid	2 cc.	0.2 gm.	20 cc. Water	80 cc.	45° C.	1 hour	Coagulation should no longer occur upon addition of Nitric acid.
Japan	Powder	.28	1.5	100 cc. Tepid water	400 cc.	38° C.	30 mins.	Requirement same as U. S. P.
Germany								Not official.
France	Powder	0.2 gm.		60 gms. Distilled Water	2.5 gms. Desiccated Fibrin or 10 gms. dried in air.	50° C.	6 hours	Filter:—10 cc. of clear liquor should not become cloudy by the addition of 20 drops of Nitric acid. (Sp. Grv. 1.394 @ 15° C.)

PANCREATIN—ESTIMATION OF AMYLOPSIN.

Country	Amount Ferment	Official Product	Starch grams	Distilled Water	DIGESTED		Iodine Solution	End Point
					Time	Temperature		
U. S. A.	0.3 gm.	Powder	7.5 gms.	200 cc.	5 mins.	40.5° C.	2 drops N/10 I. in 60 cc. water.	Converted into substances soluble in water. Four drops of converted starch solution should give no color, or at most only a wine red when added to the Iodine solution. Under these conditions 1 part pancreatin digests 25 parts of starch.
England								Not official.
Germany								Not official.
Japan								Not official, see Diastase { Japan Pharm. / See below.
France	.05 gm.	Powder	5 gms. Potato	100 cc. Water	1 hour	55° C.		A fluid liquid is obtained which, when filtered, reduces 4 times its volume of Fehling's solution.
DIASTASE.								
Japan	.05 gm.	Powder	5 gms. Potato	100 cc. Water	2 hours	55° C.		10 cc. of digested starch solution should completely decolorize 40 cc. Fehling solution.

The last product to be considered is peptone, and this is recognized by but one nation, namely, France, under the title Peptone Medicinal.

It is official as a pancreatic or peptic digestive product of albuminoids; is almost completely soluble in water, not coagulated by heat nor by the addition of nitric acid; it has a peculiar odor and a bitter taste when made by pancreatic digestion and a bitter and saline taste when made by peptic digestion.

A perusal of the before mentioned variations in the official methods adopted for the standardization of animal products by the various countries, shows that physiological chemists in general have not as yet adopted uniform methods along this line of chemistry. I predict, however, that with the advent of the next issue of the United States Pharmacopœia our foreign neighbors will admit our superiority not only in the manufacture of this important line of pharmaceuticals, but also in their standardization, and will adopt not only our products but our methods as well.

STANDARDIZATION OF SODIUM THIOSULPHATE VOLUMETRIC SOLUTION.*

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A reference to page 563 of the U. S. P., will show that the official method of standardizing sodium thiosulphate V. S., is to employ a decinormal solution of potassium dichromate proceeding as follows:

"To a solution of about 1 gm. of potassium iodide (Potassii Iodidum, U. S. P.), in 10 cc. of diluted sulphuric acid contained in a flask of about 500 cc. capacity, add slowly, from a burette, 20 cc. of tenth-normal potassium dichromate V. S., shaking after each addition. Place a watch-glass on the mouth of the flask and allow it to stand for five minutes, then dilute the solution with about 250 cc. of distilled water, add some starch T. S., and then, from a burette, the trial solution of sodium thiosulphate, in small portions at a time, shaking after each addition, and, toward the end of the operation, reducing the flow to drops, until the blue color of the mixture changes to a light green; note the number of cc. of the trial sodium thiosulphate solution consumed. Then dilute the sodium thiosulphate solution so that equal volumes of it and the tenth-normal potassium dichromate V. S. will exactly correspond to each other under the above conditions, at 25 deg. C. (77 deg. F.)."

On page 549 of the U. S. P., volumetric iodine solution is directed to be made by the following:

Tenth-normal iodine V. S. may be prepared according to either of the following methods:

"1. Dissolve 12.59 gm. of pure iodine (see below) in a solution of 18 gm. of potassium iodide in 300 cc. of water. Then add sufficient water to make the solution measure, at 25 deg. C. (77 deg. F.), exactly 1000 cc. Unless freshly prepared, its strength should always be determined anew at the time it is used. Transfer the solution to glass-stoppered vials.

Preparation of Pure Iodine.—Heat powdered iodine (Iodum, U. S. P.), in a porcelain dish placed over a bath of boiling water for twenty minutes, and stir it constantly with a glass rod, so that adhering moisture, cyanogen iodide, and most of the iodine bromide and iodine chloride, if present, may be vaporized. Then transfer the iodine to a porcelain or other non-metallic mortar, and triturate it with about 5 percent of its weight of dry potassium iodide, so as to decompose any remaining iodine bromide and iodine chloride. Then return the mass to the dish, cover it with a glass funnel, and heat the dish carefully on a sand-bath. Detach the

* Read before the Kings County Pharmaceutical Society, March 9, 1915.

sublimed, pure iodine, and, after pulverizing and drying for twenty-four hours over calcium chloride, keep it in well-stoppered bottles, in a cool place."

Since N/10 Iodine is the exact equivalent of N/10 $Na_2S_2O_3$, the U. S. P. on page 550 gives as an alternative method of preparing the N/10 Iodine the following:

"Dissolve about 14 gm. of iodine (Iodum, U. S. P.), in a solution of 18 gm. of potassium iodide (Potassii Iodidum, U. S. P.), in about 300 cc. of water, diluting finally to 1000 cc. Of this solution (which is too concentrated), carefully measure from a burette 10 cc. into a flask, then add gradually and cautiously, from a burette, tenth-normal sodium thiosulphate V. S. (shaking constantly) until the color of the solution is discharged. Note the number of cc. of the sodium thiosulphate V. S. consumed, and then dilute the iodine solution so that any known volume of the latter will require for decolorization exactly the same volume of the tenth-normal sodium thiosulphate V. S."

This indicated to me that the factor for $Na_2S_2O_3$ V. S. standardized by either potassium dichromate or resublimed iodine would be the same, and to determine whether such was actually the case the following work was undertaken: A N/10 $K_2Cr_2O_7$ V. S. was made up by the following method on page 551 of the U. S. P. employing Kahlbaum's Salt.

"Dissolve 4.8713 gm. of pure potassium dichromate, which has been pulverized and dried at 120 deg C. (248 deg. F.), (see Reagent No. 85), in sufficient water to measure, at 25 deg. C. (77 deg. F.), exactly 1000 cc."

The $Na_2S_2O_3$ V. S. standardized against this had the factor recorded in tabulation below.

Another lot of N/10 $K_2Cr_2O_7$ made up by the same method using Baker's salt, the same $Na_2S_2O_3$ V. S. had the factor noted below.

Small amounts of Iodine prepared as directed under V. S. iodine were weighed off and after solution in water with the aid of KI employed to standardize the $Na_2S_2O_3$ sol.; the factor is recorded below.

Iodine prepared as directed by the U. S. P. under V. S. Iodine was mixed with KI placed in a small porcelain crucible, heated on a sand bath until copious evolution of iodine fumes. Then one of a set of watch glasses with ground edges, which were tared with a clip, was slipped over the top of the crucible until a sufficient amount of iodine had sublimed; after cooling, the watch glasses, clip and iodine were weighed again. The increase in weight being iodine. The watch glasses and iodine without clip were then put into a few cc. KI solution, and when the iodine was dissolved the $Na_2S_2O_3$ V. S. was run in until the reaction was complete. The factor for the $Na_2S_2O_3$ solution is noted.

Factor employing Kahlbaum's Chemical 1 cc.=.011342 grammes iodine.
1 cc.=.9009 cc. N/10 $Na_2S_2O_3$ V. S.

Baker's Chemical 1 cc.=.011362 grammes iodine.
1 cc.=.9025 cc. N/10 $Na_2S_2O_3$ V. S.

Iodine resublimed on funnel 1 cc.=.011539 grammes iodine.
1 cc.=.91652 cc. N/10 $Na_2S_2O_3$ V. S.

Iodine resublimed on watch glass 1 cc.=.011533 grammes iodine.
1 cc.=.91604 cc. N/10 $Na_2S_2O_3$ V. S.

These results indicate that the use of resublimed iodine gives higher and probably more accurate results than the potassium dichromate method.

I am fully aware of the fact that the potassium dichromate used for standardi-

zation is usually directed to be checked against pure iron as is evidenced by the following citation from page 136, U. S. Dept. Agr. Division of Chemistry, Bul. 107, revised, under the determination of the iodine number of fats and oils.

"*Decinormal potassium bichromate.*—Dissolve 4.9083 grammes of chemically pure potassium bichromate in distilled water and make the volume up to 1 liter at the temperature at which the titrations are to be made. The bichromate solution should be checked against pure iron."

But of course this requires another determination and further complicates the standardization of the $Na_2S_2O_3$ V. S.

In view of the close duplicates obtained by the use of resublimed iodine and simplicity of employing the watch glasses and clip method, I would suggest this as the most satisfactory means of accurately standardizing $Na_2S_2O_3$ V. S.

The sodium thiosulphate solution was made by taking 4 liters of distilled water, boiling until all air and CO_2 were expelled, placing in a large amber-colorded bottle, and when cool, dissolving about 100 grammes of C. P. sodium thiosulphate in the liquid.

The bottle was set away in a dark place until ready for use (about six weeks). When a syphon tube with pinch cock was inserted and a layer of neutral liquid petrolatum placed on top of the liquid, by blowing into a hollow glass tube in the other hole of the rubber stopper the syphon was started.

Making up the solution by using distilled water from which the air and CO_2 are expelled, allowing to stand until decomposition and precipitation has taken place, covering with a layer of liquid petrolatum and syphoning off the quantities of solution required makes an ideal method of handling not only this volumetric solution but very many others, it being our practice to follow this method whenever possible.

RESEARCH AND ANALYTICAL DEPARTMENT RIKER LABORATORIES.

A PROFESSIONAL "SIDE LINE" FOR THE PHARMACIST.*

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The introduction into therapeutics, of antitoxins, vaccines, serums, bacterins, etc., and the principles inculcated in the "Therapia Sterilans Magna" with the advent of Ehrlich's Salvarsan and Neo-Salvarsan have had a marked influence upon the prescription department of the pharmacist, and, for self-preservation, he has turned to commercialism and has converted his pharmacy into a miniature department store, instead of taking the more logical and ethical course of preparing to supply the physician with these new therapeutic agents, which have replaced so many of the old ones that at one time made the prescription department most remunerative.

In this paper, I do not aspire to the dubious distinction of originality, but will merely attempt to illustrate that the pharmacist can, with a little additional prepa-

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ration, and without investment of much money, add to his store a profitable and ethical professional "side line," which will bring him into closer relationship with the physician and improve his prescription patronage indirectly, as well as partly remunerate him for the loss of some of the prescription work that has been replaced by the use of other agents.

The modern pharmacist can easily equip himself with the necessary knowledge and apparatus to do for the physician, the simpler chemical tests that are used in clinical diagnosis, i. e., ordinary urine analysis, gastric analysis, etc.

Believing that the practice of such a side line by the pharmacist would be a step in the progress of advancement of the profession, I will present to you this paper, which if met by your approval will be followed by other similar papers that might constitute an introductory course of instruction, which if added to the pharmacist's knowledge of chemistry and chemical technique, will aid you to perform these tests, and thus legitimately serve the physician and the public in an ethical manner.

In this paper, microscopical tests are not included, being limited to the chemical tests that can be performed by any intelligent pharmacist.

The apparatus and the reagents required for this work are simple and inexpensive and most of them are found in every pharmacy. The following apparatus is sufficient for most of this work: Burette and holder, pipettes, beakers, funnels, test tubes, sedimentation glasses, evaporating dishes, Bunsen burner or alcohol lamp. The reagents will be mentioned with the various tests.

I will consider the analysis of the gastric contents to begin with. The physician desires a qualitative and quantitative analysis, and I will group the easily performed tests into these two subdivisions.

A. Qualitative tests:

1. Quantity, odor, appearance (blood, pus, undigested food, mucus, etc.).
2. Reaction: Litmus test.
3. If reaction is acid, determine if acidity is due to free acids: Topfer's reagent (one percent alcoholic solution of dimethylamidoazobenzol) is most commonly employed; this gives a red color, if free acid is present.
4. If free acid is indicated, determine if this is mineral (hydrochloric) or organic (lactic):

GUENZBERG'S REAGENT.

Phloroglucin	1 part
Vanillin	2 parts
Alcohol	100 parts

A few drops of this reagent mixed with ½ to 1 cc. of filtered gastric juice and evaporated in a porcelain capsule will produce a red color as the mixture evaporates, (avoid excessive heat) if free mineral acid is present.

BOAS' REAGENT.

Resorcin	10 parts
Cane Sugar	5 "
Alcohol	5 "
Water, q. s.	100 "

This reagent is used as Guenzberg's, and the results obtained are similar if free mineral acid is present.

5. Organic Acid:—(lactic) Uffelmann's Reagent (2½% aqueous solution until the mixture becomes of an amethyst color). A few cc. of gastric contents are added to about 5 cc. of the reagent in a test tube, and if organic acid is present, a yellowish color will replace the bluish color; if mineral acid is present, a colorless solution will result. Therefore, if free mineral acid has been found to be present by test number 4, it is necessary to separate the organic to properly perform this test; this can easily be accomplished by shaking the gastric contents (a few cc.) with ether, which will extract the organic acid away from the mineral acid, and when the etherial layer is evaporated (spontaneously) the residue can be dissolved in distilled water and Uffelmann's reagent applied.
6. Starch: Iodine solution, or Lugol's solution (a few drops) gives a blue color.
7. Erythrodextrin: Iodine solution, or Lugol's solution, gives a reddish color.
8. Maltose: Fehling's, or Haines' solutions (a few cc.) boiled with a few cc. of the gastric contents will be reduced and a heavy reddish or reddish brown precipitate will appear.
9. Propeptone: a. Primary proteoses are precipitated by one-half saturation with ammonium sulphate.
 b. Secondary proteoses are precipitated by complete saturation with ammonium sulphate.
10. Peptone: The Biuret Test: This is performed by the addition of dilute cupric sulphate solution, then adding NaOH or KOH solution in excess (i. e., until distinctly alkaline) a pink color indicates peptone, violet indicates other soluble proteins. This reaction is sometimes enhanced by the aid of slight heat.
11. Pepsin: A few shreds of freshly, coagulated egg albumen are added to a few cc. of (acidulated to 0.4%) gastric contents and its digestive quality noted.
12. Rennin: 5 cc. of gastric content should completely curdle about 15 cc. of milk in from about 10 to 15 minutes, when kept at incubation temperature.

B. Quantitative tests.

1. Free HCl: Titrate with N/10 or N/20 NaOH, using Topfer's reagent as an indicator.
2. Combined HCl: Titrate with N/10 or N/20 NaOH, using alizarin as an indicator, then deduct the results of this titration from the total acidity.
3. Total Acidity: Titrate with N/10 or N/20 NaOH, using phenolphthalein as an indicator.
4. Organic Acids: Extract a known quantity of gastric content with ether, then titrate the residue for total acidity; this result deducted from the total acidity before extraction of the organic acid with ether will indicate the quantity of organic acid.
5. Pepsin: Digestive influence on Mett's tubes.

A POSSIBLE SOURCE OF ERROR IN SOME ALKALOIDAL ASSAYS.*

P. A. W. SELF, B. SC., F. I. C.

A short time ago, as the result of an accident, my attention was directed to the interaction which, in favorable circumstances, may take place between free alkaloids and ammonium salts, and to the error which may arise from this cause in alkaloidal assays where the alkaloid is titrated. Although there does not appear to be any probability that a capable and experienced analyst ever falls a victim to this possible source of error, yet it appears quite worthy of notice, since it is certainly not generally recognized, while, at the same time, it may easily produce serious inaccuracies in the work of any one who is somewhat inexperienced in alkaloidal determinations.

That certain of the alkaloids have the power of expelling ammonia from its salts is fairly well known, but it does not appear to be equally well known that probably this power is possessed—to some extent and in suitable circumstances—by nearly all alkaloids. Ammonia, it is true, is a much stronger base than most fixed alkaloids, but its great volatility largely counterbalances this fact, for it is a matter of common knowledge that a feeble base or acid is capable—in conditions allowing interaction—of expelling from combination a much stronger member of its class, if the former is fixed and the latter volatile, at the temperature employed. A good example of this is given by the process of glazing earthenware, where, at the high temperature used, the extremely feeble acid, silicic acid, is able to decompose sodium chloride, with formation of sodium silicate, and expulsion of the very strong (but volatile) acid, hydrochloric acid.

Now, in an alkaloidal assay, if the alkaloid is liberated by *ammonia* and the volatile solvent employed in the final shaking-out is not washed with water, but is run directly into a dish and evaporated, there is considerable danger of a small volume of the aqueous layer (containing an ammonium salt) being carried into the dish with the alkaloid. This may happen in two ways: in the first place, by carelessless in the separation of the two layers of liquids, and, secondly, by a little of the ammoniacal solution clinging to the sides of the separator being carried down mechanically by the friction of the issuing stream of solvent; in either case, during the final stage of the evaporation, we have in the dish free alkaloid in contact with a solution of ammonium salt. The natural result is that, as pointed out above, a certain amount of interaction takes place (the extent of this being dependent on several circumstances), with consequent loss of ammonia and formation of an alkaloidal salt. The residue finally obtained, therefore, consists of a mixture of free alkaloid and alkaloidal salt, and the titration, of course, only gives the amount of the former.

It is interesting to note that here the result obtained is *too low*, whereas when the alkaloid is not titrated, but *weighed*, the introduction of ammonium salt causes the result to become *too high*. The error in the case of titration may,

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however, be much more serious than when the alkaloid is weighed, since owing to the high molecular weights of all alkaloids, a very small quantity of a salt of ammonia is capable of causing the neutralization of a comparatively large weight of free alkaloid if interaction is complete. Thus one part of ammonium chloride will interact with 12 parts of aconitine, 5.4 parts of atropine, or 6.3 parts of strychnine.

In order to ascertain the degree of error which may result from the cause under consideration, in alkaloidal assays, a number of quantitative experiments were made, with the following results:

In the first series of experiments, weighed amounts of pure alkaloids were dissolved in a little chloroform or ether, a small quantity of a weak solution of ammonium chloride added, and the whole evaporated to dryness on a water-bath and titrated in the usual way. In each case a similar experiment was performed, in which the ammonium chloride was omitted, in order to eliminate any other error and check the purity of the alkaloid.

The results obtained, together with fuller details of each individual experiments, are given in Table I.

It will be seen from the Table that the interaction was greatest in the case of atropine, the reaction being practically complete in both experiments. With aconitine the larger amount of apparent loss in the second experiment was probably due to the use of ether causing better contact between the reacting substances than when chloroform was employed, a result which might very well be expected. Strychnine gave least interaction, this no doubt being due to its extreme insolubility in water rendering contact with the ammonium chloride very difficult. In all the experiments, however, considering the minute quantities of ammonium chloride used, the apparent loss of alkaloid was comparatively large.

TABLE I.

Alkaloid Used	Details of Experiment	Amount Taken	Amount Found by Titration	Apparent Loss
Atropine ...	Alkaloid dissolved in 5 mils of ether, and about 4 milligrammes of ammonium chloride in 1 mil of water added.....	0.0189 gm.	0.0243 gm.	0.0246 gm.
Atropine ...	Alkaloid dissolved in 5 mils of chloroform, and about 2 milligrammes of ammonium chloride in 0.5 mil of water added	0.0451 gm.	0.0333 gm.	0.0118 gm
Aconitine ..	Alkaloid dissolved in 3 mils of chloroform and about 4 milligrammes of ammonium chloride in 1 mil of water added	0.0925 gm.	0.0839 gm.	0.0086 gm
Aconitine ..	Alkaloid dissolved in 10 mils of ether and about 2 milligrammes of ammonium chloride in 0.5 mil of water added.....	0.0502 gm.	0.0336 gm.	0.0166 gm
Strychnine .	Alkaloid mixed with 3 mils of chloroform and about 8 milligrammes of ammonium chloride in 2 mils of water added	0.0956 gm.	0.0809 gm.	0.0147 gm
Strychnine..	Alkaloid mixed with 10 mils of ether and about 2 milligrammes of ammonium chloride in 0.5 mil of water added.....	0.0479 gm	0.0451 gm.	0.0028 gm

A few assays of belladonna leaves were next carried out, using the method of the present Pharmacopœia (Br.), but in some experiments washing the chloroform used in the final extraction, with water, and in others allowing small quantities of the aqueous layer to pass into the dish with the alkaloids. The method adopted for the purpose of eliminating any possibility of variation in the first stages of the assay, in comparative experiments, was as follows:

Fifty grammes of the powdered leaf were taken, the extraction with ether-chloroform and shaking-out with acid performed with five times the pharmacopœial quantities of all the reagents, and the acid extract then made up to 250 mils; 50 mils of this liquid were taken for the final stage of each separate experiment, and the exact volumes of chloroform prescribed by the Pharmacopœia used in shaking-out. Three samples of leaf were employed, and the circumstances were varied, as described in Table II.

In experiments (3) and (4) the separation of the chloroform was done with great care, the only aqueous liquid carried into the dish being that unavoidably removed from the sides of the separator by friction, as explained above; the results are, however appreciably low. In experiments (6), (7), and (9), small quantities of the aqueous layer (containing, of course, some ammonium sulphate) were added intentionally, the other circumstances being the same as in experiments (3) and (4), and in all three cases the errors produced were very serious. It is worthly of note that in this assay the fact that ether is added to the alkaloidal residue and then evaporated off again appears to increase any error due to the presence of ammonium salt by promoting better contact, since the apparent loss in experiment (9), where no ether was used, was comparatively much smaller than in experiment (6).

TABLE II.

Number of Sample	Number of Expermt.	Circumstances of Experiment	Percentage of Alkaloid Found	Error
I.	1	Chloroformic solution of alkaloid washed with water	0.295	—
	2	Chloroformic solution of alkaloid washed with water	0.289	—
	3	Chloroform run very carefully into dish without washing	0.278	0.014
	4	Chloroform run very carefully into dish without washing	0.278	0.014
II.	5	Chloroformic solution of alkaloid washed with water	0.402	—
	6	As expts. (3) and (4), but about 0.3 mil. of aqueous layer run into dish in addition	0.197	0.205
	7	As expt. (6), but 0.5 mil. of aqueous layer added	0.191	0.211
III.	8	Chloroformic solution of alkaloid washed with water	0.278	—
	9	As expt. (6), but 0.25 mil. of aqueous layer added, and alkaloid not treated with ether finally	0.208	0.070

It is therefore quite evident, from the figures obtained in both sets of experiments, that in any alkaloidal assay in which the alkaloidal residue is titrated great

care must be exercised to avoid the introduction into the latter of even as little as 1 milligramme of an ammonium salt—that is to say, it is extremely advisable to wash the solution of alkaloid in volatile solvent with water.

From this point of view it is somewhat unfortunate that in the pharmacopœial assay processes for belladonna leaf and tincture and dry extract of belladonna no directions are given for washing the chloroformic solution of alkaloid before evaporation and titration, while it is certainly very difficult to understand why the precaution which was omitted in these cases should have been taken in the assay of liquid extract of belladonna. With regard to aconite and its preparations, while the prescribed filtration of the ether, if properly carried out, appears to render any appreciable error unlikely, yet great care must be taken that none of the aqueous layer passes through the filter, otherwise owing to the high molecular weight of aconitine, a very serious error may result.

THE VARIATION CLAUSE OF THE FOOD AND DRUGS ACT.*

SOME REASONS FOR THE EXISTENCE OF THE CLAUSE AND AGAINST ITS REPEAL.

J. H. BEAL, URBANA, ILL.



Section Seven of the Federal Food and Drugs Act declares that a drug shall be deemed to be adulterated if, when "sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as laid down in the United States Pharmacopœia or National Formulary official at the time of investigation."

To this declaration the so-called variation clause is attached in the form of a proviso which reads, "*Provided*, That no drug defined in the United States Pharmacopœia or National Formulary shall be deemed to be adulterated under this provision if the standard of strength, quality, or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopœia or National Formulary."

The meaning of the foregoing somewhat involved phraseology is, in brief, that when a title found in the United States Pharmacopœia or National Formulary is used without qualification or explanation, the article sold thereunder must be of strictly U. S. P. or N. F. quality, but that such a title may be used (under the proviso) upon an article of a different standard if the label plainly indicates the standard to which it conforms.

Identical or very similar provisions are found in many of the state food and drug acts, so that arguments for or against the existence of the variation clause of the Federal law will have equal application to state laws.

In view of the fact that the repeal of the variation clause has been demanded upon the ground that it permits the sale of inferior and adulterated products under official titles, it may be profitable to consider some of the reasons which

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lead to its inclusion in the law, and also some of the reasons why its repeal would work unnecessary hardship to the chemical arts and industries and be inimical to the legitimate interests of pharmacy and medicine.

(1) *The Pharmacopœia is a book of limited standards properly applicable to drugs and chemical products only when used in pharmacy and medicine.*

The purpose of the food and drug laws is to prevent fraud and deception in the sale of drugs and medicinal products, not to limit the proper activities of manufacturing pharmacists or chemists or to restrict the trade in chemical or medicinal products within narrow, specified channels.

The Pharmacopœia appropriates titles previously devised and generally used in the arts and industries and attaches to them special meanings and limitations which, though sufficient for pharmacopœial processes and purposes, are not practicable when applied to substances used in the chemical arts and industries in which by far the large proportion of such substances are consumed.

The Revision Committee of the Pharmacopœia in standardizing these substances standardizes them solely for medicinal purposes or for use in the official formulæ and processes. Many of them have other and important uses outside of pharmacy and medicine, and it would be monstrous if the Pharmacopœia by the adoption of well known and commonly used titles could thereafter prevent their use in connection with products to which they had always been attached unless such products were modified to fit the pharmacopœial standards.

The framers of the official standards have themselves recognized the unfitness of these standards for commercial and technical purposes by the specific declaration in the preface to the Pharmacopœia that, "The standards of purity and strength prescribed in the text of the Pharmacopœia are intended to apply to substances which are used solely for medicinal purposes, and when professedly bought, sold, or dispensed as such."

The openly alleged purpose in making the variation clause a part of the Food and Drugs Act was to give legal force and effect to this declaration from the preface to the Pharmacopœia. Consequently, the repeal of the variation clause at this time could hardly be interpreted in any other light than as showing the intention of Congress to reverse its former action, and to make of universal application the words of the statute that an article shall be deemed to be adulterated if, "when sold under or by a name recognized in the United States Pharmacopœia or National Formulary, it differs from the standard of strength, quality or purity, as laid down in the United States Pharmacopœia or National Formulary official at the time of investigation."

(2) *The variation clause is essential to the utilization of certain natural products in a perfectly proper and legitimate manner.*

Certain alkaloid-bearing drugs are properly required by the United States Pharmacopœia to contain specified percentages of their respective alkaloids when dispensed as medicines or when used in the preparation of official tinctures and fluidextracts. Nature, however, does not always supply drugs which contain exactly the specified content of alkaloid. Sometimes the percentage is below and sometimes above the official specifications, and a drug which is too strong is just as much illegal as one which is too weak.

While such drugs are unfitted for medicinal use in their natural condition,

they can be brought to the proper strength by grinding and mixing those which are above with those which are below the official requirements, or they can be utilized for the manufacture of the free alkaloids. These are perfectly proper and legitimate uses of such drugs, but in the absence of a variation clause in the Food and Drugs Act they could not lawfully be imported or transported in interstate commerce for these purposes.

(3) *The restriction of medicaments to one particular standard, which could not be varied from under any circumstances, would be an unwarranted interference with the freedom of choice of medical practitioners who might prefer a different standard.*

Physicians and schools of medicine are by no means in accord as to the best forms of particular medicaments, and forms which are preferred by certain schools are condemned by others. The only proper condition of the law is one which will permit each physician to purchase or to prescribe that which in his judgment is the best.

For example, the Spirit of Nitrous Ether was formerly prepared by the action of nitric acid on ethyl alcohol in the presence of metallic copper, whereas the present official process requires it to be made by reaction between ethyl alcohol, sodium nitrite and sulphuric acid. Rightly or wrongly, many physicians insist that the old process yielded a spirit containing different by-products and therapeutically much superior to that produced by the present method of manufacture, and such physicians will not knowingly use a preparation made by the formula now official.

There can be no good reason why those who prefer the older product should not be permitted to have it, nor can there be any good reason why it should not be dealt in under a label which shows plainly that it was prepared according to the method formerly official.

Numerous other instances might be cited, where special forms of preparations preferred by particular physicians or particular schools could not be lawfully dealt in under their proper titles were it not that the variation clause makes them legal when they are appropriately labeled to show their variation from the present pharmacopœial standard.

(4) *The insistence upon an invariable standard which under no circumstances could be departed from requires the unwarranted assumption that the present official standards are perfect standards, and would operate to delay the introduction and use of improved and superior therapeutic products.*

A new revision of the Pharmacopœia is issued approximately every ten years, and each revision shows many changes from the standards formerly official. Many, or perhaps most of these changes are proved to be necessary by experiments made and published long before the new volume appears, or even before the Revision Committee has been selected. By virtue of the variation clause the superior products resulting from the adoption of these changes are immediately available in commerce by the simple expedient of labeling them so as to show that they conform to a different standard.

Examples of improvement produced by changes in official formulas are found in the newer liquid preparations of the so-called heart-tonic series of drugs of which digitalis is typical. When the eighth decennial revision of the Phar-

macopœia appeared in 1905, no acceptable method of standardizing the preparations of these drugs had been worked out. Since that date, however, several fairly reliable methods of physiological standardization have been developed, by means of which it has been fully determined that the use of a stronger alcoholic menstruum will yield a product which is not only initially more active, but one which will deteriorate much less rapidly than one made with the official menstruum. The fortunate inclusion of the variation clause in the food and drug laws permitted these greatly superior products to become immediately available, whereas without this saving clause they could not have been marketed, except under new and unfamiliar titles, until after the publication of the ninth revision of the Pharmacopœia, which will probably appear some time during the present year.

A large list of other preparations might be named in which modifications of official formulas yield improved products, the superiority of which is attested by the fact that the modifications are later approved and adopted by the Revision Committee. In the majority of instances the new preparations involve the employment of more costly materials or of more expensive processes of manufacture, so that the changes are not suggested by a desire to debase or cheapen the products, but solely by the desire to provide the medical profession with more efficient therapeutic agents.

(5) *The repeal of the variation clause would make it impossible for the owner of a stock of drugs and chemicals to dispose of them in a lawful manner when the standards of the Pharmacopœia are altered.*

Sometime during the present year a new Pharmacopœia will become official, and will show some hundreds of changes from the standards now in force, which means that some hundreds of items of an ordinary drug stock will suddenly become illegal if offered for sale under their titles as these will appear in the new book. These articles were in full compliance with the legal standards when made or purchased, and without any act or fault of their owners have been converted into adulterated products by the change in standards.

A legitimate demand for the articles conforming to the former standard will still exist, but only by virtue of the continuance of the variation clause in the law will it be possible to dispense them under proper labels showing the standard to which they conform.

(6) *The abuses claimed to be due to the existence of the variation clause can be largely, if not entirely cured by a proper interpretation of the variation clause.*

The principal offense charged against the variation clause is that it permits the marketing of so-called grocers' drugs, as ammonia water, hydrogen peroxide solution, spirit of camphor, etc., of inferior quality by the device of stating their percentage strength upon the label, and that the purchaser is deceived for lack of knowledge as to what a proper preparation should be.

The fault here, however, is in permitting the use of a label which does not fully comply with the requirement that the "standard of strength, quality, or purity" shall be *"plainly stated"* on the label.

The clear intendment of the law is that a drug of other than U. S. P. or N. F. quality shall show upon its label the information necessary to enable a purchaser to form an intelligent judgment of its quality or purity, either by direct

reference to another standard or by statements which of themselves sufficientaly indicate its quality and purity.

What such statements would need to be must, of course, vary with the nature of the product and with the character of the persons to whom addressed. When placed upon products intended for use by trained chemists and pharmacists, statements indicating percentages of important constituents, or the activity of the preparation for certain purposes, would be sufficient to convey all the needed information, while in the case of articles intended for popular purchase and consumption some additional or different statements might properly be regarded as necessary.

This is an interpretation that I think the courts would recognize as being in accord with the spirit of the enactment, and one that if enforced will effectually protect the innocent purchaser against intentional fraud and deception.

STATE ANTI-NARCOTIC LAWS.

M. I. WILBERT.

The enactment of the Federal anti-narcotic law, December 17, 1914, has suggested to many the desirability of bringing about greater uniformity in state anti-narcotic laws and in a number of states bills have been introduced that are designed to bring the requirements of the state law into accord with the present Federal law.

While greater uniformity in laws designed to restrict the sale and use of narcotic drugs is no doubt desirable, there are several points that may well be considered by pharmacists before they undertake to endorse any one of the proposed uniform state anti-narcotic laws modeled after the Federal law of December 17, 1914.

Not the least important of these several points is the fact that the Federal anti-narcotic law, quite unlike the Federal food and drugs act, is applicable and is now uniformly in force in all parts of the United States and is by no means restricted, as is the food and drugs law, to Federal territories and to interstate traffic.

With this fact in mind it would be manifestly unnecessary to re-enact in the several states any part or all of the Federal anti-narcotic law. Such enactment would only tend to duplicate the penalties that might be imposed on a person for not complying with the law, as conviction under one law would make the same person guilty or amenable under the other.

An article published in Public Health Reports for March 26, 1915 (page 893-923), presents a comparative analysis of the more important requirements embodied in the existing Federal and state laws that are designed to restrict or to regulate the distribution and use of opium, coca and other narcotic or habit-forming drugs. This analysis shows that even at the present time a number of the state laws include requirements similar to those embodied in the Federal law and to this extent duplicate that law and subject the individual found guilty of non-compliance to double punishment. On the other hand the existing state laws,

in some instances at least, are more comprehensive than is the Federal law, and for this reason it would be unfortunate indeed to repeal all of the existing laws or to restrict in any way the possible influence for good that may be embodied therein.

Future state legislation should be primarily designed to elaborate or to augment the present Federal law by reasonable exercise of the state police powers. To do this it will be above all necessary to restrict the prerogatives or privileges of persons who may be licensed under the Federal act as pharmacists, physicians, dentists, veterinary surgeons or chemists and to define in clear language the rights and limitations of hospitals and sanitariums to use or distribute the proscribed drugs. The state should also restrict the distribution, sale and use of dangerous drugs not already included in the Federal law. The desirability of the latter feature is evidenced even at the present time by the fact that no fewer than eighteen states restrict the sale and use of chloral and its derivatives, while four restrict the sale and use of cannabis indica, both drugs that may be used to produce deleterious habituation or intoxication.

The legitimate objects of a state anti-narcotic law, from this point of view would be:

A further restriction of the articles that may be sold without providing a satisfactory record;

Some reasonable form of definition as to the rights and privileges of practitioners of pharmacy, medicine, dentistry, and veterinary medicine;

A requirement for the prompt reporting of habitual users of any of the enumerated drugs;

Reasonable provisions for the committing of habitual users of habit-forming drugs to public institutions, where they will be properly taken care of;

Provisions for the revocation of licenses to practice pharmacy, medicine, dentistry, or veterinary medicine that may be held by habitual users of habit-forming drugs;

Provisions for the revocation of the license to practice any one of the above-named professions, after conviction under the Federal or state laws designed to restrict the sale and use of narcotic drugs; and finally

Satisfactory provisions for enforcing the several requirements embodied in the law.

A law of this type would of necessity be primarily designed to safeguard public health and its enforcement should therefore preferably be entrusted to the State Department of Health, providing an appropriation is made to secure a sufficient number of inspectors or agents necessary to enforce the provisions of the act.

The penalties imposed should be sufficiently severe to make violation of the law a matter of serious consequence and should for the second offense, at least, include the possibility of imprisonment in the discretion of the court.

Efforts to restrict the use or abuse of drugs that constitute a menace to the future welfare of our American people are generally admitted to be among the more serious problems confronting the citizens of this country at the present time. As pharmacists, we should not forget that we are by law entrusted with the distribution of these drugs and it is incumbent on us to make all reasonable efforts to safeguard their sale and eliminate as much as possible all illicit traffic in drugs

of this type. We pharmacists should not forget that unless we collectively and individually make strenuous efforts to convict the guilty, we as members of the drug trade, must suffer by being held in part responsible for the harm that may be done to the community at large.

UNIFORM STATE NARCOTIC LEGISLATION.*

CHARLES WESLEY DUNN.

In considering the form of a uniform state narcotic law the first problem for solution is the extent of its scope. It is fundamental that the obligation imposed upon the persons affected by this law should not be duplicated in the state law to the extent that two sets of records or two different acts will be required to satisfy a similar requirement, Federal and state. In view of the fact that the Federal law relates to all commerce, both interstate and intrastate, should the states leave the entire field of the regulation of commerce to the Federal law and only include additional and supplemental provisions of a police character? We believe that this question must be answered in the negative for the following reasons, viz.: First, and principally, and as the practical reason, the states will not be denied a very important exercise of their police power. They will not be content to leave the regulation of the commerce in narcotic drugs solely to the Federal Government. We believe that any propaganda along this line would be resented and futile, and therefore, not wise. Second, this duplication of law and enforcement is inevitable under our own system of national, state and municipal regulation, and is general at the present time. Uniformity and harmony of such regulation is the object to be sought, in order that no conflict in such regulation may exist and no unnecessary or undue provisions may be included. Third, and providing always that the Federal and local regulation is uniform and harmonious, the additional state regulation insures greater efficiency and breadth of enforcement. Duplication of penalty under similar Federal and state laws is not a substantial basis for criticism. For, after all, a uniform and effective law necessary in the public interest and fair and just in application is a proper subject for state enactment. Fourth, and finally, it should be considered that, while the state cannot, constitutionally, void the operation of the Federal law by conflicting provisions, yet it may supplement the Federal law and occupy a ground beyond that circumscribed by Congress in the Federal law. These supplemental provisions will not only relate to matters not included in the Federal law, of a police character, such as the treatment of habitual users, but will, also, supplement to a greater or less degree, the Federal provisions regulating the commerce in these drugs. The history of the existing and proposed narcotic legislation to date substantiates the soundness of these reasons.

It is our opinion, therefore, that a uniform state narcotic law should be com-

* Read before the Society of Medical Jurisprudence, New York City, May 10

plete in itself and its scope should only be limited by the extent of the provisions deemed necessary and advisable to be included therein.

We now have to indicate several fundamental considerations which should, we believe, be held in mind in the drafting of a uniform state narcotic law:

(a) A uniform state narcotic law, as the name implies, should be in entire harmony with the Federal narcotic law. The record and official order form requirements, etc., of the Federal law, so far as they go, should be accepted as satisfactory under the state law. It is perfectly obvious that it is placing a needless and unwarranted burden upon the medical and pharmaceutical professions to require two different official order forms and two different and distinctive sets of records, Federal and state.

(b) A uniform state narcotic law should contain no state compulsory registration and taxation provisions for the reason that such provisions would be needless and unwarranted. The revenue form of the Federal narcotic law was only adopted by Congress in order to permit, constitutionally, the reaching of all commerce, impossible under an interstate commerce act. No such reason exists in the states. The registration information under the Federal law is open to the state officials. Such special taxation laws relating to foods and drugs enacted by the states are not, we believe, and generally speaking, equitable. The general funds of the several states should be used for the administration of these laws. We do not believe it advisable to provide in a uniform state narcotic law that only those persons who have registered under the Federal law may deal in and prescribe these drugs under the state law, because of possible constitutional questions which might thereby be raised, and for a very sufficient reason that such a limitation is entirely unnecessary. Every person who is legitimately dealing in or prescribing these drugs must register under the Federal law and no one else may so register.

(c) A uniform state narcotic law should follow the wording of the Federal narcotic law, so far as possible, in the interest of identity, clarity and simplicity. The development should always be toward the amendment of the Federal law, where such an amendment is advisable, as the law of the land, rather than toward building up state legislation without further reference to the Federal law. This is the general principle we believe should be followed so far as possible. Doubtless there will be sufficient reasons for instituting certain requirements first through the medium of state legislation. Certain other provisions of a police or local character will always be the special and exclusive province of the states.

(d) A uniform state narcotic law should include supplemental police provisions in the public interest. The following provisions might well be considered:

1. The regulation of the treatment of the habitual users of these drugs, including a provision for committal to some suitable institution, where such committal is in the public interest. The legitimate medical treatment of narcotic habitues should be affirmatively recognized and approved. It does not appear to be in the public interest or in the interest of humanity to search down these unfortunate individuals as criminals and a public menace and to arbitrarily confine them in institutions, and to arbitrarily cut off their supply of narcotics. Is not this rather

a medical question, to the larger degree, which must be so determined? We believe that it would be a fair and effective requirement to provide for a clinical record of the disposition of narcotic drugs to an habitual user, which record shall be open to the inspection of the State Board of Health. That the disposition of these drugs to habitual users for any other than a medicinal purpose should be prohibited. That due provision should be made for the medical treatment of such persons and for commitment to some suitable institution, public or private, where such commitment is deemed advisable in view of all the circumstances. The commitment provisions should be carefully circumscribed to provide against their abuse.

2. Provision should be made for the liability to the revocation or suspension of his license by a licensed physician, dentist, veterinary surgeon, nurse, or registered pharmacist, who is addicted to the use of these narcotic drugs in a manner contrary to the public welfare or who has been convicted of such a violation of this law that such revocation or suspension would be in the public interest. In keeping with the seriousness of such a revocation or suspenstion due provision should be made to properly protect the legitimate rights of the person charged, by providing for a fair hearing on a reasonable notice and, further, by providing for an appeal to a court of competent jurisdiction for a review of the sufficiency of the evidence on which the revocation or suspension was based.

3. Provision should be made to prohibit the false and fraudulent issuing or altering of a prescription or order for the purpose of avoiding the provisions of this law and to prohibit the false and fraudulent assumption of the title or name, in any manner, of a physician, dentist, veterinary surgeon or registered pharmacist, or the posing as a legitimate dealer in order to avoid the provisions of this law.

Other similar police provisions will, no doubt, be found advisable. We have only the time now to briefly indicate a few suggestions. We do not refer to the provisions included in the Federal law and regulations against the refilling of prescriptions, etc., which should be included, as a matter of course, in a uniform State narcotic law.

We believe that a uniform State narcotic law should exempt, as should, also, the Federal law, derivatives, preparations and manufactures of the affected narcotic drugs which do not possess narcotic or habit-forming qualities.

It would not appear to be necessary to include a special provision regulating the commerce in hypodermic needles and syringes, for the reasons that an effective regulation of the commerce in the narcotic drugs of themselves would include the legitimate use of the instruments by which they are administered. This expression of opinion is subject to correction if such regulation would not be sufficient.

Provisions relating to opium for smoking purposes and to the smuggling of these drugs into public institutions should be the subject of special and separate legislation.

The Federal narcotic law relates to opium and coca leaves, their manufactures, salts, derivatives and preparations. Several of the State laws relate, in addition, to chloral hydrate, cannabis indica, cannabis sativa, etc. It is certain

that no State should be asked or would be expected to eliminate these drugs from the existing laws, if their regulation is in the public interest. If there is a general need for such regulation the Federal law should be so amended. If there is a local need the local law should be maintained. Again, in several states, there are exceedingly strong special laws, such as cocaine laws. The advisablity of disturbing these laws where no question of uniformity is involved would be questionable. Here, again, local conditions are a factor for consideration.

These and other problems will have to be met in the preparation of a uniform State narcotic law, which law will, no doubt, have to be remolded to a greater or less extent in respect to matters purely local and where no question of uniformity is involved. The purpose of such a uniform State law would be to provide certain uniform fundamental provisions, to raise the local law in each locality to the highest degree of efficiency, to eliminate unnecessary or unwarranted provisions, and, then, to leave to the individual states the solution of purely local questions.

That there is a need for a uniform state law will be apparent from an examination of the existing State narcotic laws, with their diversity and conflict of provisions. The problems underlying State narcotic legislation involving social, economic, medical, penal and general public welfare considerations, are so important and their proper solution so entirely in the public interest, that such an intelligent and co-operative study thereof and final expression in a uniform law cannot but prove distinctly valuable. State narcotic legislation will now be an important and active subject for consideration by the legislatures of the several states. Many well intentioned but ill-advised suggestions will be made. The value of general uniformity will perhaps be lost sight of. It behooves, therefore, the medical and pharmaceutical professions to give careful and thoughful attention to the subject of uniform State narcotic legislation. A uniform law has already been suggested by the Chamber of Commerce of the United States of America, through its committee on uniform food and drug regulation, and by the National Association of Retail Druggists. The enlightened and public spirited co-operation of the medical and pharmaceutical professions in such beneficent matters reflects its greatest credit upon them. The Society of Medical Jurisprudence is peculiarly positioned and equipped to seriously and actively study this important problem to the end that an effective uniform state narcotic law may be enacted which will best serve the interests of the public, and the legitimate interests of the pharmaceutical and medical professions.

A special committee on narcotic legislation has been appointed by the president of the Society of Medical Jurisprudence, consisting of Charles Wesley Dunn and Doctors Reynold Webb Wilcox and Frank H. Daniels.

GREASY COLD CREAMS.

ERNEST R. JONES, PH. C.

I doubt if there is a more popular toilet preparation than a fatty or greasy cold cream. Most every retail druggist has such a preparation under his own label. Many prefer to have these creams prepared for them by some manufacturing house, but there still remains a lot of druggists who will always prepare their own according to some "pet" formula they may possess.

The term "Cold Cream" probably originated from the fact that the evaporation of the moisture from them when applied to the skin gave a cooling effect.

The writer has recently conducted some exhaustive experiments with greasy cold creams and believes that some of his findings will be of great interest to the manufacturing pharmacist.

The pharmaceutical literature is filled with formulas for these creams, some of which differ considerably, and a great many of which give poor products. Let me state at the beginning of this paper that I am not going to give any formulas for making these creams, but will merely give you the results of my experiments and such suggestions as may help you in locating your source of trouble or in improving your formula.

At least four things are necessary to make a good cold cream, namely: 1st, white beeswax; 2nd, an oil; 3rd, a saponifying agent, and 4th, water.

Before taking up these different classes of ingredients, let us consider first

THE CHEMISTRY OF GREASY COLD CREAMS.

These creams are essentially emulsions. What, then, is the emulsifying agent?

We all know that soap has great emulsifying properties. If a soap is formed with the beeswax, and this soap acts as the emulsifying agent, then if the beeswax were omitted and castile soap, or any other soap, used instead, with enough ceresin to harden it, the resulting product should be a cold cream or emulsion. I have made such a cream, and while it is not a salable article, the fact that it was possible to make a cream in such a manner is good proof of the formation of a soap when beeswax is used.

If we mix the proper quantities of stearic acid, alkali, liquid petrolatum, water and an unsaponifiable hardening agent, such as paraffin or ceresin, an emulsion is readily formed. Here the alkali forms a soap with the stearic acid, and this acts as an emulsifying agent.

If beeswax is substituted for the stearic acid, we get the same results. Accordingly, we would conclude that there is present in the beeswax some constituent which will readily form a soap with as weak an alkali as borax.

According to Lewkowitsch[1] beeswax consists chiefly of a mixture of crude cerotic acid and myricin (melissyl myricyl palmitate). It also contains small quantities of free melissic acid and three or four other unimportant ingredients. The amount of this latter acid present is so small that we do not need to consider it.

[1] Lewkowitsch, 5th Edit. Vol. 2, P. 900

According to Lewkowitsch,[2] free cerotic acid is present to the extent of 12 to 16 per cent, depending upon the source of the wax.

We know that solutions of borax, owing to the hydrolysis that takes place, react quite alkaline; that is to say, its solutions will contain a small amount of sodium hydroxide. When these aqueous alkaline solutions are brought in contact with the melted beeswax, all or a portion of the free cerotic acid is saponified. This soap then acts as an emulsifying agent for the balance of the wax and the other ingredients.

This equation may be represented thus:

$H.C_{26}H_{51}O_2$	+	NaOH	=	$Na\ C_{26}H_{51}O_2$	+	H_2O
Cerotic Acid		Sodium Hydrate (from borax solution)		Sodium Cerotate (soap)		Water

The other ingredient of beeswax, myricyl palmitate, ($C_{30}H_{61}.O.CO.C_{15}H_{31}$) probably is not saponified to any appreciable extent and more likely not at all by the alkaline borax solution, for such esters are very hard to saponify even with stronger alkalies and require considerable time to effect the change. In making cold creams the alkalinity of the borax solution is immediately neutralized by the cerotic acid, and it is therefore improbable that the myricyl palmitate enters at all into the chemistry of cold creams.

I desire to take exceptions to an article on "The Chemistry of Cold Creams," by Groat,[3] who claims that borax reacts with the myricyl palmitate and with the glycerides of other oils and fats to saponify them. The preceding paragraph will show my reasons for differing with him in this respect.

To continue, in the same article Groat gives an equation showing the reaction of the borax and water upon the myricyl palmitate in which he claims palmitic borate is formed. As he does not mention anything at all about the soap that is formed (sodium cerotate) one would conclude that this was his idea of the reactions entering into the manufacture of cold creams. He could not have tried to prove his statements by experiments, for he goes on to say, "We shall now take up the reaction of borax with spermaceti. The chief constituent of spermaceti is cetincetyl palmitate, which is attacked by the borax forming palmitic borate, as in the case of white wax, etc." Here again his idea is the formation of an ester (palmitic borate) by the borax. Let me say right here, that you cannot make a cold cream from spermaceti unless you introduce soap by some other means, for spermaceti does not contain more than traces of free acid and therefore could not form a soap of itself. Palmitic borate does not exist to any extent, if at all in cold cream, and Groat's statements are in my opinion, erroneous. To sum it up, I would say that he has overlooked the presence of free acids in the wax which form soaps with the alkaline borax solutions and instead has given the impression that organic esters were formed. Supposing one should use sodium carbonate or sodium citrate instead of borax. These both form cold creams with wax. Then according to his theories the resulting cream would consist of palmitic carbonate or palmitic citrate. Perhaps he did not know that a cream could be made from these above named substances. I have prepared such creams.

[2] Lewkowitsch, 5th Edit. Vol. 2, P. 905.

[3] Journal of the A. Ph. Assoc., Feb., 1915, P. 169.

Both the carbonate and the citrate give aqueous solutions which are alkaline. According to the Hydrolytic Dissociation Theory we would not expect sodium citrate to give as strongly alkaline solution as the carbonate and could not therefore expect as much soap to be formed or as good a cream as when the borate or carbonate are used. We find such to be the case, but there is enough soap formed to prove that the emulsification of the cold cream is brought about by the soap rather than by the formation of any esters.

Only such fats and waxes as contain free acids can be used to form soaps with the borax solution. Those fats and waxes which are free from acid are only valuable as stiffening agents. You will then see that beeswax or some other such product which has *an acid value* is absolutely necessary in order to make a cold cream.

The acid value indicates the number of milligrams of potassium hydrate required to saturate the free fatty acids in one gram of a fat or wax, and is therefore a measure of the free fatty acids in a fat or wax.

It is evident that if an oil or fat consists exclusively of neutral triglycerides, its acid value will be nil. We would not expect such a fat or wax to yield a soap or to act as an emulsifier for the balance of ingredients.

Lewkowitsch gives the following acid value for the several fats or waxes:

	Acid Value
Carnauba Wax	2
Japan Wax	20
Spermaceti	traces
Beeswax	20
Tallow	4
Paraffin	0
Ceresin	0

According to my theories then, one could not make a soap from paraffin or ceresin and a solution of borax or any other alkaline solution. Consequently a cold cream could not be made from these substances unless wax or some other substance containing free fatty acid is added. From the above table we would not expect spermaceti to act any better for it is, according to the above, a practically neutral substance. Tallow and Carnauba wax will however make an emulsion, but as the quantity of soap formed is very small the cream is not smooth, or in other words, the emulsion is not very good. Japan wax and beeswax we would expect to yield good creams. Experiments made in the laboratory prove this to be so, although I do not recommend Japan wax to you for use in your creams, because it has a lower melting point and more color and odor than beeswax. These statements are offered as further proof that a soap is formed in making cold cream and to show that only those substances containing free acid will make an emulsion when the borax solution is added.

Let us now pass on to the first class of ingredients necessary to make cold cream, namely:

HARDENING OR STIFFENING AGENTS.

Beeswax as you all probably know is secreted by the common bee, *Apis mellifica*. Honey is removed from the combs by centrifugal force. The wax is then obtained by melting and straining or by expression. The expressed wax is as a rule of a yellowish color and has to be purified, followed, if required, by a

process of bleaching, either by air and light or by chemical agents which will yield nascent oxygen.

The best bleached white wax is of a pure white or only slightly yellowish color. The whiter the wax you use in your cream, the whiter the cream will be.

It can be definitely stated that white beeswax is absolutely necessary to every first class white cold cream. It supplies the soap necessary to form the emulsion and gives the smoothest cream of any of the waxes. It should be present in sufficient quantity to give the cream the desired stiffness. However, white wax is quite an expensive substance and a part of it can be replaced by other substances such as spermaceti, paraffin or white ceresin. In making such substitutes one must bear in mind that a certain amount of white wax is necessary to make the emulsion and when too much of the white wax is replaced the creams are not smooth and in some cases there is a tendency towards separation of the emulsion. I would advise you not to try to take out too much of the white wax.

Spermaceti, then, is only valuable as a stiffening agent, because it does not form any soap. It is also quite expensive and has a low melting point (45°-50° C.) More of it is therefore required to accomplish the purpose than is required of either paraffin or ceresin, consequently it is an expensive and unnecessary ingredient. Six samples of cream were made containing varying amounts of spermaceti. The ones containing the least of it were easily selected as being the smoothest, but none of them were as smooth as when the spermaceti was omitted entirely. I would therefore advise that spermaceti be omitted from your formula and that paraffin or white ceresin be used instead.

Paraffin is useful as a stiffening agent. Too much of it cannot be used as it will interfere with the smoothness of the cream.

White ceresin is an excellent stiffening agent when used in conjunction with white wax. Ceresin (osokerite) is a natural earth-wax or hydrocarbon. When purified and bleached it is a snow-white solid resembling paraffin in its properties. It has considerably higher melting point (about 62° C.) than paraffin, consequently less of it is required to produce the same amount of stiffening. It is a little more expensive than paraffin but much less so than spermaceti. Like paraffin, it cannot be used in too great a quantity.

Stearic acid is sometimes used as a stiffening agent, in small amounts. It permits of the incorporation of more water and thus gives a whiter and less greasy cream. It has the disadvantage of making the cream granular in time, even if very small amounts are used. If the smoothness of your cream is a desirable asset, don't use stearic acid.

When creams are to be sold in warm climates more stiffering agent is required.

THE OILS.

Two classes of oils are sometimes used: the vegetable and mineral.

The vegetable oils are said to be absorbed better by the skin than the petroleum oils, and therefore are preferred in medicinal creams. Expressed oil of almonds, peach kernel, castor, olive, cocoanut, cottonseed and sesame oils are frequently used. The objection to them is that when emulsified, they quickly become rancid. Also they impart an odor which is objectionable and do not yield the whitest of creams.

Lanoline is sometimes used, but its odor and color are objectionable. If a white cream is desired, it cannot be used at all. It has the advantage of being easily absorbed by the skin.

This brings us to the mineral or petroleum oils. These oils can be secured in a variety of grades differing in color, odor and specific gravity, according to the price you wish to pay. It is not necessary to buy the Russian mineral oils for creams. American oils are cheaper and good enough grades are obtainable. To make the best cream, the oil should be colorless and with as little odor as possible. The specific gravity may range from .860 to .880. One gives as good a cream as the other, but the one of the higher specific gravity requires less stiffening agent.

A snow-white mineral jelly or petrolatum may be used in creams for warm climates. If used in other climates less stiffening agent should be used. One does not need to pay the price asked for these jellies for they are not natural jellies but are made by solidifying the mineral oil with white ceresin. All you would have to do to obtain this same effect would be to increase the amount of white ceresin in your formula.

The claim has been made that mineral oils induce the growth of hair. The writer believes that this is without foundation and the public have a wrong idea of the matter, which is traceable to unscrupulous advertisements. If there is any growth of hair, it more likely comes from stimulation of the hair cells through massage.

Cold creams made with mineral oil are permanent and do not turn rancid.

THE SAPONIFYING AGENT.

Borax is the best for this purpose. This salt is a combination of a strong base and a weak acid. When dissolved in water, it undergoes hydrolysis, yielding solutions which are distinctly alkaline to litmus. This alkalinity is neutralized by the cerotic acid of the wax forming the soap which in turn acts as an emulsifying agent for the balance of the ingredients.

Creams can be made with any other substances whose solutions react alkaline. Those made with potassium salts are softer than those made with sodium salts.

Borax gives the best and smoothest cream and is to be preferred over all others.

The fourth essential ingredient is

WATER.

Distilled water is always to be preferred, although tap water can be used if it does not contain much calcium or iron. The proper amount to use is an important matter. No matter what the ingredients you select or how good the quality, unless you use them in the proper proportions, that is, have your formula properly balanced, your cream will not be the best possible to obtain.

I have analyzed several cold creams on the market and found them to contain from 22 to 40% of water. The one containing 40% was the whitest but the least smooth of any and contained some stearate; otherwise this high percentage would not have been possible.

It might be said here, that the water is what makes the cold cream white. The more water, the whiter the cream of course, but too much water makes the cream granular and may cause a separation.

My experiments have shown 25% of water to be the proper amount to use from a manufacturer's view point. I have observed such samples during two years and find them to keep perfectly without separation or granulation.

THE PERFUME.

The perfume is added just before the cream is drawn off into the containers, otherwise a portion of it is volatilized by the heat. The perfume should not contain much alcohol as the alcohol has a tendency to break up the emulsion, especially when hot.

Rose, Lilac and Violet are the most popular odors, the rose predominating. Rose and Violet are quite expensive. Lilac is one of the cheapest.

Let me caution you about lilac perfumes for creams. Most of them excepting perhaps a few expensive ones, contain quite a bit of terpineol. Some of you may be using terpineol itself as a perfume. This substance is very irritating to the skin and should not be used in cold creams. Synthetic perfumes are more often irritating than natural oils. If you have complaints that your cream irritates the skin, the first place to look for the trouble is in your perfume.

One other thing about perfumes. They often cause discoloration of the cream, sometimes even making the cream decidedly brown.

The discoloration by the perfume must be distinguished from the loss of whiteness that comes from the cream drying out. To test this, make up two samples of cream from the same formula. Perfume only one of them. Preserve them under the same conditions in the same kind of containers. After standing awhile they can be compared. If the perfume sample is noticeably more discolored than the other, the trouble can be attributed to the perfume.

THE CONTAINER.

Collapsible tubes are by far the ideal, as the cream does not dry out and they are more sanitary.

Collapsible tubes are not as attractive to the trade as jars and are not as convenient for the druggists to fill.

Jars with screw tops are therefore the most popular. You cannot be too careful in selecting your jars. I refer particularly to choosing a jar which has a tight-fitting cover. The covers should require at least a full turn to tighten them and extra precautions such as a paraffined card-board washer should be used. In fact, you should aim at having your jar as nearly hermetically sealed as possible. The reason for this is very simple, yet it is the cause of many a druggist's or manufacturer's difficulties. Cold cream contains water, which cannot help but dry out if improperly protected. As the cream loses water, it loses its whiteness and takes on a lardy appearance. It shrinks in the jar and pulls away from the sides. The result is soon only a partly filled jar.

The cream should be poured into the jars while still liquid and at as low a temperature as possible to prevent too large a hollow being formed in the center. A better surface can be obtained by warming the jars before filling them with cream. This permits of a more even cooling of the cream, whereas when poured into a cold jar the cream cools around the sides and bottom first. As it cools it contracts and forms the hollow in the center and may cause a pulling away of the cream from the sides of the jar.

PINK CREAMS.

Colored creams are novelties. A pink cream with a carnation perfume is quite popular just now.

These are made by dissolving a small amount of an oil-soluble color in the melted fats before adding the borax solution. The latter is not to be colored.

To make a pink cream, use the dye known as Oil Red S.

THEATRICAL COLD CREAMS.

These are cheaper creams and are usually sold in large packages. They may be softer than an ordinary cream. A cheap grade of mineral oil can be used. They are not intended for toilet purposes but for "make-up" use and therefore do not need to be of as good a quality.

TROUBLES YOU MAY ENCOUNTER.

Cream is not smooth. This may be due to a poor formula or to improper care in mixing.

Lack of whiteness. The wax may not have been very white or the cream may have lost some of its water.

Separation of water indicates either carelessness in mixing or more likely a faulty formula. Perhaps your formula contains too high a percentage of water.

Cream appears lardy after standing some time. Indicates loss of water. Covers do not fit tight enough.

Shrinking in the jars indicates loss of water.

Pulling away from sides of jars. If this takes place within a few days it may be due to improperly balanced formula or to pouring the cream too hot or to using too cold jars. If it does not take place for several weeks, it is probably due to loss of water.

Discoloration. This is almost always due to the perfume. The use of iron utensils may also cause discoloration.

Cream separates. May be due to the jars standing in the sun or in too warm a place.

CONCLUSIONS.

1. Greasy cold creams are essentially emulsions, brought about by the formation of a soap by the alkaline borax solution and the free cerotic acid of the wax, the soap acting as an emulsifying agent.

2. White beeswax, paraffin or ceresin, colorless liquid petrolatum (mineral oil), borax and water in proper proportions form the best creams.

3. Creams made from the above ingredients are more permanent than when vegetable oils are used and do not turn rancid.

4. Much attention should be paid to obtaining tight-fitting covers for the jars to guard against loss of water.

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REMARKS ON DIGITALIS.*

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It is generally stated in text-books and also in the United States and other pharmacopœias that the digitalis leaves of the second year's growth are preferable to those of other years, and that the cultivated ones are inferior to the wild ones. Recent observations do not seem to support this statement. F. H. Carr, in the *American Journal of Pharmacy*, states that the first and second year's growths have proved identical in their activity, and the cultivated leaves are at least as active as those wild grown. Hatcher, who in his "Text-book of Materia Medica," by Hatcher and Sollmann, indorses the preference of the second years' growth, has since, in a recent article (*Drug. Cir.*, 1914), claimed equal value for first and second years' leaves, as well as for cultivated leaves in comparison with wild ones. Lloyd's observations also confirm this view, and he attributes the erroneous statement about the second year to the fact that formerly also the root was used, which in the first year is insignificant and sappy, while the second year's root is larger and heavier and more pronounced in quality. There may be another reason, however, for adhering so long to the second year's leaves as better. The statement in the text-books is followed by the other one, "gathered at the commencement of flowering." Now, digitalis does not flower till the second year, and leaves could not be gathered in the first year at the commencement of flowering. As the flowers were also used formerly, and are used today in Japan, it can be understood how the statement of the second year's growth originated, flowers and leaves being gathered at the same time. According to the best investigators, this statement should therefore be changed to "leaves of the first or second year's growth should be used."

Professor Hivohashi, of the University of Tokio, Japan, who made extensive investigations in digitalis, states (*Apoth. Zg.*, 1913, vol. 28, p. 9) that digitalis *flowers* probably contain more of the active constituents than do the leaves, and the buds are more active than are the expanded flowers.

As to the preservation of the gathered leaves, all kinds of more or less complicated directions are given in the various pharmacopœias. According to recent literature, however, foxglove leaves do not differ materially from most other vegetable drugs; that is, they will deteriorate if kept carelessly, and keep almost indefinitely if properly stored in air-tight containers in dark places. The changes that do undoubtedly happen take place in the time between gathering and marketing, according to the manner in which the drying is done.

There are four pharmaceutical preparations of digitalis official in our pharmacopœia, viz.: The extract, the fluidextract, the tincture, and the infusion, of which the first one is but rarely and the second one not often used. According to all authorities, the tincture and infusion are the two most reliable preparations,

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but there is a vast difference of opinion as to the relative value of the two. Herzfeld states that:

"I believe that in this country the tincture is the least reliable of all preparations of digitalis, particularly since, for the sake of convenience, it is frequently prepared by diluting the fluidextract, which in itself may be inferior."

Other authorities also dwell on the improper preparation of tinctures from fluidextracts. It is well worth while to stop a minute to investigate this charge. I myself have in former years, when physicians made this remark, asked them how many pharmacists, to their positive knowledge, made their tinctures from fluidextracts. Generally the answer was: "Well, of course, I do not know, but conclude, from the fact that sometimes tinctures do not produce the desired effect, that they are made improperly." And when I replied: "Doctor, are you sure that in such cases you always ordered the right medicine?" the answer would be: "Of course I did; I diagnosed the case myself." In other words, whenever the patient does not respond to the treatment the fault lies with the pharmacist, but not with the physician. The unbiased observer will say, if men are apt to make mistakes there will be as many mistakes made by physicians in diagnosing as by pharmacists in dispensing. I personally do not believe that the practice of making tincture from fluidextract is general; it may prevail among lazy and indifferent druggists, who hardly have any prescription trade for this very reason.

Coming back to our subject, there is besides Doctor Herzfeld no other authority to reject the tincture. As a rule, the tincture is preferred to the infusion, so far as reliability is concerned, and whenever the full cardiac effect of digitalis is required. As a diuretic, in cases of faulty circulation of blood through the kidneys, the infusion is preferred by probably 95 percent of all practitioners. An exception is Doctor R. A. Hatcher, who in a recent paper states that:

"As a matter of fact, a properly-made infusion, as well as the tincture, contains all of the therapeutic active principles of digitalis."

He tries to prove this statement by saying that the marc left after making the tincture is inert, and if an infusion be made with this marc and tested on a frog, the truth of this statement becomes apparent. It is to be regretted that he did not also examine the marc left after making the infusion. Later on, in the same article, he says:

"An infusion from a fluidextract might be unsightly, but it would probably be more active than the official infusion which one would obtain from the nearest pharmacy. This practice is distinctly not advocated, but pharmacists should understand the fact."

We ask: Why not advocate it if it makes a better infusion? And if the tincture and infusion are of equal value, why not make the infusion from the tincture, or why not delete one or the other?

In direct contradiction to Hatcher's results we will cite Herzfeld:

"According to the methods of Keller-Fromme, no digitoxin or digitalin could be detected in an infusion prepared according to the U. S. P., while in an infusion, made after my method, as high as 0.02086 percent digitoxin could be found."

Doctor Herzfeld's method is as follows: The leaves are finely broken up and

freed from the stems and ribs. They are then covered with the entire quantity of boiling water and allowed to digest upon the water-bath at 50° C. for one hour. When cooled down to about 32° C. an amount of alcohol corresponding to 10 percent of the finished infusion is added and the whole permitted to stand for twelve hours. The resulting product is then filtered, the leaves expressed, and the necessary amount of water added to restore the volume. Later on he says that this "infusion" (it is rather a weak tincture) should always be prepared fresh. This would compel the patient to wait about fourteen hours for his medicine, a rather long wait for cardiac patients.

In an editorial of the *American Druggist,* 1913, vol. 16, p. 12, the statement is made that:

"According to Henry Beates, not one physician in ten can tell the difference in the effect produced by an infusion of digitalis made from a fluidextract and that produced by one made from the assayed leaf."

This may be interpreted that physicians are not able to tell the effect of their medicine, or that Doctor Hatcher's statement of infusions made from fluidextract is correct.

As to the reliability of the fluidextract itself, we quote J. D. Riedel:

"Fluidextract of digitalis U. S. P. VIII was found to vary in specific gravity from 0.945 to 0.991, and in extract content from 10.30 to 17.41 percent."

And Puckner (*Jour. Amer. Med. Assn.,* 1913) claims:

"Examination of twenty samples of fluidextract of digitalis confirmed the generally-held belief that commercial digitalis preparations vary most widely. The most active were found to be nearly four times as active as the weakest."

Against this statement protests were afterwards printed in a number of pharmaceutical publications.

In the coming pharmacopœia the formula for the infusion of digitalis will remain the same while the alcohol in the tincture will be increased to 60 percent and the fluidextract to 70 percent. It is claimed that this large amount of alcohol is necessary to preserve the preparation.

I regret that the formula for the infusion will remain unchanged. It is now made with the boiling water and 10 percent of alcohol is added after straining. For what purpose is the alcohol added? The properly prepared infusion without alcohol will keep long enough to be taken, and for a longer preservation the amount of alcohol is inadequate. The alcohol should be omitted and the remark: "To be freshly prepared, when wanted," added to the formula. As it stands now, the presence of alcohol misleads many thoughtless pharmacists to think that the infusion may be kept in stock.

Prolonged medication with tincture of digitalis often produces nausea and other untoward effects. It is stated that a certain fat or fixed oil present in the leaves is the cause. As this substance is soluble in petroleum benzin, the leaves can be freed from it by subjecting them to the action of benzin before making the tincture. The general verdict of the medical profession is in favor of this fat-free tincture, although Hatcher and others deny its preference.

According to Hatcher's experiment, isolated fat from digitalis proved harmless. This probably is true, but would be no proof that even a small amount of this fat in the presence of various alkaloids may not influence their action.

As to the source of the best leaves of foxglove not much literature is available. It is stated that the plant grows in England, Middle Europe, and also in America, and here and there the timid statement is made that soil containing iron is best adapted for its growth. According to Gehe (*Handelsberichte*, 1913, p. 84):

"Digitalis is found generally on soil containing iron and manganese, and does not occur in Switzerland on this account. It is assumed that manganese is essential for the life of digitalis."

In contradiction of this, Hatcher says:

"Another curious misconception regarding digitalis which is hard to explain is that the leaf grown in certain regions is more active than that grown in other localities."

This is probably the most remarkable statement in Hatcher's excellent paper. Whosoever has paid attention to the development of agricultural chemistry, the introduction and first results of which have made Liebig immortal, would rather say: "It would be hard to explain if the leaf grown in certain regions were not more or less active than that grown in other localities." I do not think that a plant of powerful and characteristic properties is known that does not change its nature nor produce its constituents in a larger or smaller quantity when transplanted to a new soil. Every farmer in France and Germany knows that the same potato planted in a marshy soil will produce a different tuber than when planted in a sandy soil. Grape vines brought from the Rhine or Garonne to California will flower and bring fruit, but the grape differs in flavor and amount of alcohol produced. The same vine even differs in different parts of California. Many European aromatic flowers, like chamomile, mullein, and others, grow abundantly in America, but lack the ingredients that make them valuable; and they even differ in aromatic properties in different parts of the home country. Why should digitalis be an exception to this general rule? Doctor Thoms, of the Pharmaceutical Institute of Berlin, one of the best and most careful pharmacologists living, states in the last volume of the *Arbeiten aus dem Pharmazeutischen Institut*, 1914, p. 202, speaking of the difficulties of cultivating certain medicinal plants:

"How important, for instance, it would be to have digitalis, which in different parts of Germany is subject to such extraordinary variations in respect to its active principles, under proper scientific cultivation and discover the conditions which for the growth and production of the active principles of digitalis are most favorable."

The chemistry of digitalis is still more confused than its pharmacy, and so far every new assayer has discovered—or claims to have discovered—new principles of various nature. The number of so-called active constituents of the plant is growing daily. Merck & Co., in their annual report of 1911, mention 92 different articles, with their discoverers and properties, and the number has been increased considerably since then. Many of these are identical, and a good many are mentioned only in the papers published by their authors, but were never isolated or brought in the market. Among these many names four stand out prominently, namely, digitalin, digitonin, digitoxin, and digitalein.

The oldest one of these, digitalin-Nativelle, was isolated by the French chemist Nativelle, who claimed it to be a pure substance, while Schmiedeberg, who made

an extensive examination of the plant, pronounces Nativelle's digitalin a mixture of several substances, and gave the name digitalin to another chemically uniform, amorphous body for which he presented a formula. Another digitalin was isolated by Kiliani, another by Homolle-Quevenne, another by Lancelot, another by Lebourdais, and so on. In Merck's list the name of digitalin appears thirty-seven times, each time denoting a different article. No wonder that a confusion prevails and that prescribers and dispensers are at a loss what is meant by digitalin. It is not the object of this paper to enter into the merits of these numerous glucosides for each of which the discoverer or manufacturer claims a certain superiority over others. But in view of these different results obtained by men of great learning, long experience, and renowned ability, we are led to the question if there is not a reason for this disagreement and if perhaps some fundamental facts or principles have been overlooked.

Now, in trying to bring the various results into some classification, we notice that nearly all agree on the fact that some of the products are soluble in water, some insoluble in water but soluble in alcohol. Kiliani states that digitoxin is insoluble in water, Hatcher makes the same statement, while Cloetta separated a soluble digitoxin, to which the name of digalen was given. It is further stated that, while digitoxin is insoluble in water, it becomes soluble in water, best in hot water, in the presence of a certain saponin that is also present and which, according to some authorities, is identical with digitalein, according to others with digitonin. The presence of a saponin is also claimed by a number of other investigators, but by no means by all. It is on this basis that Hatcher makes the claim that the infusion contains all the active ingredients of digitalis held in solution by saponin. He therefore supposes that no change takes place when the infusion cools, although every druggist knows that a slight precipitate forms, and he also must suppose that this saponin and the insoluble digitoxin are present always in the right proportion,—that is, enough saponin to dissolve the digitoxin. As a matter of fact, however, the presence of saponin is still in doubt, and even those who claim its presence do not agree on the quantity, some speaking of a trace only. But nearly all investigators agree on the instability of the various digitalis preparations and the ease with which the one is changed into the other. Some doubt the presence of any pre-existing digitoxin in the plant, believing that it forms, after the leaves are gathered, through the influence of this saponin. We are reminded of bitter almonds, where the amygdalin, through the action of a ferment, is changed into benzaldehyde, hydrocyanic acid and glucose. Might there not be a similar cause in digitalis that would account for the evasiveness of the various chemicals? It cannot be doubted that a soil containing iron and manganese is most favorable to the development of the plant, and, if the claim that manganese is necessary for the production of digitoxin is correct, what hinders us to suspect a certain relationship between manganese and this complex body? To the adherer of the infallibility of the theory of elements such a thought may appear like the outgrowth of a disordered imagination. But other apparently impossible theories have been proved to be founded on facts, and a chemical genius may come some day and upset many of our pet theories. The inadequacy of the chemistry of digitalis should certainly lead the investigators to consider the plant as a harmonious total, and not take out its chemistry as a

part that can be studied and understood without reference to its whole life and development and productions.

It would be wrong to write a review of digitalis without mentioning the physiological tests to which this plant has been subjected in the last two decades. Here the same confusion reigns as in its chemistry. Naturally so. How can we successfully test a chemical before we have absolute knowledge of its properties? Frogs, mice, rabbits, dogs, cats, have been used to establish what is called a standard. But no two investigators agree. These physiological tests are beyond the scope of the pharmacist and physician, as they require especially-arranged biological laboratories that cannot be established without considerable expense. In the same way the physiological chemist requires special training and long experience. Consequently these laboratories are, as a rule, constructed by large manufacturing houses who employ the best talent that they can find. It is natural that these men work in the interest of the firm that employs them and that their researches always confirm the superiority of the preparation that their employers prepare. This is no adverse criticism of their activity. The commercial houses that go to the expense of establishing and maintaining such laboratories try, without doubt, to produce the best articles in every line, and as each and every digitalis preparation has some advantages and characteristics of its own, it is but natural that these advantages are exploited in preference to others. But science gains but little by these efforts, and the skepticism that many entertain in reference to biological tests is justified. This became evident some years ago in New York, when the representatives of a large German manufacturing house undertook a crusade against the sins of certain druggists, as stated, in reality, however, to push and advertise a certain proprietary article. Numerous prescriptions were written by their physicians and then analyzed by chemists of repute, and incidentally a result was obtained that was not looked for. Among the prescriptions were a number for tincture of digitalis. The dispensed articles were sent to a biologist of a good name, who conducted the physiological laboratory of a manufacturing house. He tested them *secundum artem*, without prejudice, and his report was published. It now happened that some of the samples had come from his own house, and had been tested by him, and a certificate as to the strength had been attached to the containers. In his report he declared some of these same tinctures worthless, others too strong. Guaranteed assayed tinctures from other firms shared the same fate. No greater discredit could have been thrown on biological assaying by its worst enemy than by these careful, conscientious examinations. When they were introduced into the pharmacopœia it was stated that they were needed on account of the inadequacy of the chemical test; but, far from solving the problem, they have only added to the confusion and uncertainty.

Before closing I wish to refer again to Thoms' *Arbeiten aus dem Pharmazeutischen Institut*. On page 204 L. Rosenthaler is quoted as follows:

"I am of the opinion that plants produce some of their constituents as a protective weapon against vegetable or animal attacks; but as their enemies do not always have the same geographical distribution as the plants themselves, these protective principles are not needed where the respective enemies are lacking, and consequently are not produced. This supposition explains the fact that the

amount of digitalin of cultivated digitalis is less than that of the wild-grown plants."

This is not a new theory. It has been shown that the cinchona tree produces quinine as a protective against the attacks of certain insects and bacteria, and whenever the tree is transplanted to countries where it is not attacked by these enemies the production of quinine gradually decreases. I also refer to Doctor R. C. Eccles's paper on "Pharmaceutical Bacteriology" in the *Proceedings of the American Pharmaceutical Association,* 1894.

Many other instances of self-protection of plants against surrounding enemies, be they of vegetable or animal nature, or conditions of the atmosphere, could be mentioned. Here, then, is an unexplored field. We generally do not grant self-consciousness and individuality to plant organism, but the few observations that we have made seem to indicate that there is in these low organisms far more foresight and judgment in action than we admit. They may not think, but their work and productions could not be more correct and logical if they had been planned by the most highly developed mind. Nobody ever expects to discover the thoughts of a human being by dissecting his body after death and analyzing the various parts. Can we expect to explore plant life in its conception and its influence on surrounding Nature by dissecting the plant and analyzing what is left after its death?

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Editorial

E. G. EBERLE, Editor..... 63 Clinton Building, Columbus, Ohio

THE DYE INDUSTRY.

THOUGH the subjects are entirely different, the press has followed about the same lines of thought in presenting the possibilities of the dye industry as applied anent the cultivation of drug plants. The most important part of the subject namely, the research involved and the concomitant expenses have been obscured by the initial sources of supply.

More will be persuaded to venture into the cultivation of medicinal plants than will even contemplate the manufacture of dyes. The reason is obvious. Without considerable further experimentation, farmers should not be persuaded into drug plant cultivation as a source of profit, without being informed of the many difficulties they will meet with. The Journal has heretofore and again in this issue published papers on the subject. The work of experiment stations should in every possible way be encouraged.

The European war revealed that notwithstanding a high protective tariff on dyes, only a few and a very small proportion of those used, were manufactured in this country. The question, "Why this condition?" was to be expected; the answers in many instances evidenced lack of investigation. A general answer was indicated last month and may be repeated in these words, "the manufacturers and capitalists of this country have not co-operated with industrial and engineering chemists, not having come to a realization of the creative power and earning capacity of industrial research."

In this issue will be found an article on the "Dye Stuff Situation in the United States," by Thomas M. Norton. Among the many other problems confronting this industry is that the system of profitable production depends upon converting wastes or side-products into salable material. The manufacture of these thousands of products demands scientific control and expensive plants and then research work for their adaptation and successful exploitation.

The time seems opportune for keeping the importance of industrial research in the lime-light of publicity, for the discussions in the papers will be productive of good. Such work should be extended in pharmacy schools; even that done in the past, has developed men who have influenced the industries. We might refer to Herman Frasch for one example. He solved the problem of tapping the inexhaustible sulphur fields of Louisiana, that are 1000 feet below the surface and under 500 feet of quicksands. The striking feature of the largest sulphuric acid plant in the world, located at Ducktown, Tenn., is that the acid is made from smelter fumes, the nuisance of other plants. These references are only made to point out the very close relation of our laboratory work with methods that render manufacturing enterprises profitable and promoting others.

Arthur D. Little, of Boston, said recently, we should leave the dye business to the Germans, and consider some of the other things we might do with the vast

expenditure of effort, money and research that would be necessary to rival the Germans in that line.

He makes the statement that we waste 150,000,000 tons of wood a year; a billion feet of natural gas a day; coke ovens flame for miles in Pennsylvania and Colorado, wasting precious ammonia. One-tenth of the research, energy and skill which would be required to rival the German dye industry, if applied to the lumber industry of the South, would result in the creation of a whole series of great interlocking industries, each more profitable than lumbering. The South would be in position to dominate the paper market of the world, he says, transport denatured alcohol by pipe line and tank steamers, make thousands of tons a day of carbohydrate cattle feeds.

We have not made these statements to detract from the dye industry, which presents greater opportunities for pharmaceutical research, but to indicate the numerous avenues for applying our studies.

Finally we repeat that the accomplishment of great things in our related industries requires confidence and co-operation and the practical appreciation by our financiers of the earning power of research. In giving financial aid to research, colleges of pharmacy are entitled to consideration, for these institutions have largely contributed, directly or indirectly, to the development that sustains the chemical and other manufacturing industries, and such assistance will be many times repaid by the production of further opportunities and the discoveries of more economical manufacturing methods.

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NOT MORE LEGISLATION, BUT BETTER LEGISLATION.

WE are pretty well agreed that too many laws are passed and quite a few of these are not adapted to the ends in view.

Systems of business have been radically changed in recent years in order to give more efficient service. The details of conducting a modern business house, especially the methods of publicity are very different to-day than they were ten years ago and the change has affected the manufacture and selling of drugs. Sacrifice of time and money and capable men who were willing to co-operate, has made the reforms possible. Years of experience under former systems and methods not only pointed out the necessity for change but developed the knowledge for practical application.

There is considerable truth in the assertion that our country is coming to a period of statutory morals of justification of any act not prohibited by statute; it is sought to correct and regulate everything by law, whereas there should be a deeper sense of personal, social and public duty. The Hon. Thomas W. Shelton, of Norfolk, Va., said recently: "This country needs fewer laws and more real men; less jural regulation and more moral sensibility; fewer codes and more decalogues." The intelligence of a people is reflected by character, and the stability and quality of government depends on the moral evolution of its citizens.

We advocate preventive medicine and are fully convinced that there is wisdom and economy in the correction of conditions that breed disease. This we have discovered through practical experience. It would seem that experience with unsatisfactory systems of legislation and impractical laws should have instilled suf-

ficient wisdom for legislative reforms. States have become deeply interested and some of them have nullified numerous laws, but so far this has amounted to little more than patch-work, erecting further structure on the same defective system.

We must have laws, but the methods of framing and enforcing them can be materially improved. The topic has been freely discussed in the magazines and there is no reason why we should not participate, as our work occasionally comes within the range of the legislators' aim. Though the laws relating to pharmacy may not be altogether satisfactory, we have fared remarkably well and the object of this writing is not a discussion of laws, but if possible, to assemble a few familiar thoughts anent the causes of defective and superfluous legislation.

Intelligent understanding of widely different subjects is necessary for enacting laws. Vigilance is required so that proposed legislation may be scrutinized, and initiative combined with persistence, is essential for needed legislation. Deficiencies promote divided responsibilities and willingness to take chances, that somewhere and somehow, if proposed legislation is not needed, the bill will not be enacted.

The recognition of legislators depends largely on their success in carrying bills through or killing those proposed by another; most of them come with local measures or promises that have secured them election. These are the predominant thoughts, rather than the study of general public interests. The protection of the latter is "everybody's business" and in practice it is "nobody's business."

Now as to divided responsibility, the lower house depends on correction by the upper and it in turn expects the Governor's veto if the measure is imperfect or undesirable. Within the several bodies there is also a divided responsibility, looking to chairmen or presiding officers for direction. The responsibilities are thrown backward when inquiry demands an explanation, and so no one definitely assumes responsibility.

The same practice obtains relative to measures that should be enacted, the responsibilities are shifted back and forth until about all that is known is, that the provision did not materialize.

Non-enforcement of laws and inefficiency of officials is also traceable to divided responsibility. The law is blamed, the judge or other officers, the grand jury, but the blame is seldom definitely fixed. The conduct of our public affairs is too frequently placed in the hands of plausible politicians. Competency is usually a demand of business, though many a large business has declined because a father's son or personal friend needed a job. In the selection of legislators and officials preferment is often given on account of political claims or sectional recommendation; lawyers secure many of the odd jobs in public service in consideration of their speech-making, prior to election.

Walker D. Hines in an article in the Atlantic Monthly for May on "Our Irresponsible State Governments," says:

"The American people have come to assume an attitude of indifference and hopelessness toward the state governments. Legislatures are expected to prove failures. Governors and other state officials are expected to be inefficient. The work of local officers is rarely taken very seriously, and is expected to be spasmodic and fragmentary. The public rarely has any disposition to locate respon-

sibility for inefficiency in affairs of general interest, because the inefficiency is so general and the search for responsibility is so hopeless. Is it not fair to say that our scheme of divided responsibility has been a school for the encouragement of political inefficiency, and for the promotion of petty local interests at the expense of the general welfare, and has supplied an atmosphere devoid of stimulus to efficient work?"

The legislative system can be improved just as business has become more efficient by fixing not only responsibility but demanding intelligent and studied cooperation. We should realize that laws without men avail little, that they must be honest, but also have vision and courage. Our attitude should encourage capable men to give their time to the important duties of legislation and office instead of erecting obstacles that intensify tendencies in the opposite direction.

What the American people of to-day need is not only preventive medicine, that is, the adoption of rules of conduct that will eliminate the possibility of illness and the unnecessary use of drugs, to the end that the public health may be conserved; but also, preventive law, that is the cancellation or codification of existing laws, and not the enactment of new ones; and the education of the public, or rather the individual units composing the public, which go to make up public opinion, regarding their civic responsibilities. If the moral sense of the people of a city, state or nation, be raised, it will follow that the morale of the city, state or nation will be raised, also.

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AN IMPORTANT RULING ON THE HARRISON LAW.

PHARMACISTS as well as physicians have been more or less concerned regarding the amount of narcotic that may be dispensed and prescribed for a patient. The law itself, leaves the decision with the pharmacist and physician, under the provision that the dispensing and prescribing must evidence good faith and not evade the purposes of the act.

The quantity for treating habitues will differ and in every instance, a larger amount will be prescribed than required in general practice. The Commissioner of Internal Revenue has issued a ruling under date of May 11, as follows:

"Where a physician, dentist, or veterinarian prescribes any of the aforesaid drugs (those included in the provisions of the Harrison law) in a quantity more than is apparently necessary to meet the immediate needs of a patient in the ordinary case, or where it is for the treatment of an addict or habitué to effect a cure, or for a patient suffering from an incurable or chronic disease, such physician, dentist, or veterinary surgeon should indicate on the prescription the purpose for which the unusual quantity of the drug so prescribed is to be used. In cases of treatment of addicts, these prescriptions should show the good faith of the physician in the legitimate practice of his profession by a decreasing dosage or reduction of the quantity prescribed from time to time, while on the other hand in cases of chronic or incurable diseases, such prescriptions might show an ascending dosage or increased quantity. Registered dealers filling such prescriptions should assure themselves that the drugs are prescribed in good faith for the purpose indicated thereon, and if there is reason to suspect that the prescriptions are written for the purpose of evading the intentions of the law, such dealers should refuse to fill same."

This ruling requires that the dispensing and prescribing of unusual amounts of narcotics must be made a matter of record. The habitue may, of course,

object to such information passing from the physician to the pharmacist, but the ruling conforms to the purpose of the law, namely, to stop illegitimate use. Pharmacists will doubtless be pleased to have this ruling and it is for that reason editorial reference is made. How far the pharmacist will be expected to go in establishing good faith on the part of the physician, is a question of some importance in the larger cities. Physicians who treat habitues will write more prescriptions for narcotics than regular practitioners.

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THE STEVENS BILL.

OPPONENTS of the Stevens Bill base their case on alleged restriction of trade that would follow its enactment.

No one will deny that monopolies have generally been established by unrestricted competition, promoted by price-cutting. One of the weapons of monopoly is to cut the price when a small dealer endeavors to compete; after he fails or sells out to the combination, prices are again restored. This seems to be true in oil dealings, the cause of idleness of cinnabar, copper and iron mines, etc. Monopolistic advantages obtain when concerns own stock in transportation companies that make special rates or grant rebates to the favored few; delay transit, thereby destroying the trade, profit or goods of those who dare compete.

Under the Stevens Bill a manufacturer may create a special value for an article in the mind of the public, but if corresponding merit does not exist, certainly another manufacturer of a similar article, but materially better, becomes a competitor. Price maintenance has for its purpose the *prevention* of restraints of trade and the practices which suppress competition and make monopoly possible.

The Stevens Bill would legalize restricted sales of certain merchandise, just as real estate transfers may provide protection against undesirable occupation, use or resale. Every one is familiar with such restrictions and no one considers these unjust or non-enforcible. Injury could otherwise be done to residential sections of a city. Equally as great injury is done to a manufacturer when the market for an article he has established is destroyed by cutting prices on such goods. Nobody is forced to buy articles on which a price has been fixed by the manufacturer.

The Stevens Bill simply presents that manufacturers have a right to protect their property by similar restrictions recognized as lawful in connection with real estate. The recognized opposition to the measure ought to furnish sufficient argument for the retailers that their stand should be enthusiastically favorable to the Stevens Bill. Retailers should also be assured that the bill will never become a law unless they exert themselves and give moral support to those who are endeavoring to promote its enactment. We speak for the measure at this time, because the associations of various states hold their annual sessions during this and succeeding months.

IN AID OF BELGIAN PHARMACISTS.

LAST November the Netherland apothecaries inaugurated a plan, providing assistance for Belgian pharmacists who had suffered loss as a result of the European war. While realizing that their financial ability was not adequate, they believed their initiative would encourage pharmacists of other neutral countries to join them in this worthy undertaking.

The contemplated fund is to be placed in the hands of a Belgian Commission and the money thus collected loaned without interest to their Belgian colleagues. The Netherland committee of pharmacists felt assured that if the Belgian Commission could say to pharmacists in other countries that in Holland 50,000 francs had been subscribed, liberal responses would be forthcoming.

A letter from Amsterdam, addressed to the American Pharmaceutical Association in March, and signed by President J. J. Hofman and Secretary J. F. Suijver of the Netherland Society for the Promotion of Pharmacy, advises that 25,000 francs have been subscribed. With this communication, an authentic list of Belgian pharmacists, who have lost everything, is transmitted, and also views of quite a number of ruined pharmacies.

The encouragement of the American Pharmaceutical Association is solicited, and this reference is made so that the members may consider the subject, preparatory to action by the Association or as individuals. In this connection it may be said, that the Philadelphia College of Pharmacy has responded to the call; we are not advised as to whether other institutions have done so.

The subscription is to be made up of 100-franc shares and the intention is that this shall constitute a loan-fund, though it is indicated that repayment will doubtless be slow. Pharmacists of Belgium who have sustained loss of their pharmacies will be loaned an amount to be decided upon by the Belgian Commission, without interest. Five hundred Holland pharmacists have been asked to donate and out of that number 192 had responded at the time the communication addressed to the American Pharmaceutical Association was written. The Commission is to make periodical reports of contributions and expenditures.

It should be understood that the creation of this loan-fund is only for the benefit of Belgian pharmacists and is to be distributed after peace has been restored. We make no further comment than to ask the members to give this communication, which expresses the sympathy of pharmacists in one country for afflicted colleagues in another, fraternal consideration.

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PAN-AMERICAN FINANCIAL CONFERENCE.

WHILE this editorial must be written, even before the Pan-American Financial Conference convenes, pharmacists, as all other American citizens hope for its success. Invitations were extended by the United States to every other American Republic, and all except Mexico and Haiti will be represented.

In a communication to the press, Mr. John Barrett, Director General of the Pan-American Union, said:

"Pan-America and Pan-Americanism are becoming the slogans of the hour. The people of this country are awakening, as never before, to an appreciation

of the importance of the relations of the United States with its twenty sister American Republics. These countries and their peoples, in turn, are showing today a more kindly feeling than they have ever done before toward the United States and its people. While the work and propaganda of the Pan-American Union, the official international organization in Washington of the twenty-one American Republics devoted to the development of commerce, friendship and peace among them all, together with the attitude and addresses of its governing board, has been in a large degree responsible for this new spirit of Pan-Americanism, the European war has also been a mighty influence in its promotion.

"Considering the effect of great political and international events in history, it might be said that the European war has done more than any other similar influence, since the declaration of the Monroe Doctrine in 1823, to encourage solidarity, common sympathy, common interest and common purpose among the republics of the Western Hemisphere. In other words, the silver lining of the European war cloud is the favorable effect which that terrible conflict has had upon the commercial and political relations of the American nations."

We are interested largely because of the opportunities for our chemical and pharmaceutical industries. Incidentally, we have made reference to this important conference, in order to again bring up the subject of more general use of metric weights and measures. While quantities of the Pharmacopœia are designated in that system, drugs and chemicals that enter into the manufacture of the preparations are still bought and sold by the pound.

The money units of the South American republics are very similar to ours; if we are not misinformed, most of them employ the metric system commercially, hence they would undoubtedly prefer that this system of weights and measures be used in our dealings with them. Means of exchange are helpful factors in the promotion of business relations.

The commercial use of the old system of weights and measures frustrates the efforts of schools to establish the metric system or even such endeavor through official recognition.

The National Grocers' Association, at their annual meeting last month in San Francisco, voted in favor of the adoption of the metric system. Voting to do so, and putting this into practice are two entirely different propositions; one is easy, the other is apparently difficult—the remark is based on our experience.

In view of the fact that an International Pharmacopœia seems improbable, a Pan-American Standard might be attempted. It may be taken for granted that the Pan-American Conference will indirectly promote a more extended use of the Spanish Edition of the United States Pharmacopœia in South America.



THE GRADUATES.

DURING the last few weeks, parting words of advice have been spoken to graduates of Pharmacy Schools. The graduate's further task now is not only that of pharmacist but citizen, accompanied by stern responsibilities and charged with the accomplishment of duty—the battle of life against many tempting, ignoble and base circumstances. A good pharmacist is greater than he who taketh a trench; though this may be the result of heroic determination, the

task is of short duration. It is a life-long effort to be a good pharmacist, each day beset by mines and submarines and poisonous gases that attack his character. The graduate pharmacists have great advantages over those who have not had these opportunities; their responsibilities are correspondingly greater, neither can they plead unpreparedness for duties they must assume. They are expected to be leaders in their profession at home and in the ranks of pharmaceutical associations. The graduates of pharmacy, of whatever title or degree, are cordially invited to membership in the American Pharmaceutical Association, so that they may be helpful and profit by such co-operation.

E. G. EBERLE.



Panama-Pacific International Exposition

FIELDS AND WOODS IN JUNE.

WILLIAM C. ALPERS.



A stroll through the fields and woods in June is a delight and recreation. Every pharmacist should take a day off and inhale new hope and confidence with the fragrant air of budding and flowering nature. It is true, the first messengers of spring have disappeared. The lovely sanguinaria with its snow-white dress greets us no more and the saucy jack-in-the-pulpit does not preach his silent but impressive sermon any longer. But there is ample cause for enjoyment and admiration. Over yonder through the woods we discover a cluster of white blossoms, not showy, but nevertheless attractive. If we only look at the leaves of the shrub we might think it is a young maple. But the blossoms tell us that it is the viburnum that welcomes us. It is a flowering shrub masquerading in the guise of a tree. We might call it the joker of the woods. There are other masqueraders of the June woods. At a distance we see a wild rose, at least we think so. And even when we approach we do not doubt its identity. It is big and rich in color. But the stem of the plant has no thorns, and almost bewildered we again examine the flower. And now we discover that it is the showy blossom of the flowering raspberry, having a striking resemblance to the wild rose, although entirely different from the ordinary raspberry flower that nearly everybody knows. In strolling further we rejoice at the splendor of a cluster of iris versicolor with their light blue petals. This beautiful flower loves company and never grows alone; there is always a whole family, a whole tribe together, kissing and gossiping with each other. The ground becomes moist and swampy and we are about to turn, when from behind an old half-decayed trunk of a tree a nodding leaf seems to invite us to come nearer. Our efforts are well rewarded, for there almost hidden in a fissure of the tree grows the lovely orchid, the cypripedium, the showy ladies slipper rather reluctant to show its beauty. Thus we stroll from bog to bog, from bush to bush, and inhale the sweet fragrance of the elderflower that early spring has coaxed to unfold before the time. A foolish June bug buzzes into our ear and almost frightens us. Of course, he could not harm any one, and he is all too gentle to do so if he could. And he has neither beauty nor song to atone for his clumsiness. It seems he is made to blunder and annoy.

In our enjoyment of the beautiful June air we do not notice that the sun is going down; the shadows of the trees grow longer and the enchanting charm of the forest twilight gradually surrounds us. We know that it is time to leave the woods, as we might loose our way if total darkness befalls us here; and yet we linger, drawn back by the hands of fairies and sylvan spirits. Here and there a sudden light flares up. Fireflies have lit their candles and show us our way. Before us a large meadow expands. We stop in order to inhale once more the refreshing air full of ozone and terpenes. But we cannot proceed, a new charm retards our steps. This time it is not the eye that is enraptured, it is the ear. We now know that the fireflies were only the first announcers of the concert

that is to come. They arranged the notes and instruments. Here and there a chirp, a rasp is heard, like the tuning of the string before the real performance begins. Full of expectation we lean against a tree or stretch out under a sweet-smelling elder bush. Everything is ready and full of inspiration drawn from the beautiful June night, the thousands of nocturnal choristers of the grass sing and play their notes. There is a buzzing and chirping and trilling and rasping without end; each in itself perhaps without account and not much to listen to, but the blending is restful and charming and almost overwhelming.

And now comes the soloist of the bug orchestra, a tree toad, that sings its note with a serious deep voice but full of enthusiasm. The chirping of the bugs is more than a summer's monotonous lullaby, it becomes the musical background of a more skilled performer and assumes a new higher quality. Suddenly the soloist ceases and it appears as if everybody was quiet; the solemnity and grandeur of a June night seems for a moment to overpower all the other charms. Then he begins again—perhaps he has only stopped for refreshments and eaten some of his musicians—and anew the little buzzers and chirpers intonate their songs.

As we listen in rapture we try to analyze the performance and identify the individual performer, the cricket, the grasshopper, the locust, the golden beetle and others. But we fail in our task and wearily close our eyes, not to sleep, but to relax into a sweet vagrant reverie. Dream pictures appear before us as from the embers of an open fireplace in midwinter. Sweet recollections of our childhood and scenes of days long past and almost forgotten rise in our minds, and the untiring song of nature recalls the harmonies of a Beethoven sonata or Liszt's rhapsody to our ears, when in the circle of a contented family we mused in the twilight while a beloved one, long departed, gently touched the keys with magic finger.

The commercial druggist who knows no music but the clang of coin, may laugh and sneer at our weird imagination that sees beauty in useless weeds and hears melody in the noise of bugs. Let him sneer, poor man. He knows not what he misses. The revelations of nature are for him a sealed book, and his heart never thrills in ecstasy of the wonderful pleasures that she willingly gives to those who understand her, pure and innocent, sweeter than music, richer than gold.

DYESTUFF SITUATION IN THE UNITED STATES.*

THOMAS M. NORTON.

If the plans of the officials of the Commerce Department shall materialize, the urgent suggestions made by the experts of that and other departments of the government, who are constantly examining into the situation with respect to dyestuffs, will be carried out by President Wilson's administration in urgent recommendations that Congress shall safeguard any developments of the dyestuffs industry in this country by effective legislation in the form of an anti-dumping clause, or such amendments to existing laws as will prevent the German dyestuffs manufacturers flooding this country with their products and putting the domestic industry out of business when the European war shall end. It is known that

*Oil, Paint and Drug Reporter, May 24, 1915.

strong recommendations have been made that President Wilson shall take a positive stand on the subject. Such suggestions have been made by Commercial Agent Thomas M. Norton who virtually has charge of the investigation and developments of the situation, so far as information regarding dyestuffs in this country and in foreign countries is concerned.

A summarization has been made by Dr. Norton in connection with his report showing in brief form the points he has brought out. He has itemized these points as constituting factors of controlling importance in the general situation as to dyestuffs production. He says:

In reviewing the general situation the following factors are of controlling importance:

The stocks of dyes of German origin in American warehouses and mills is rapidly approaching exhaustion. It will probably disappear before the end of July.

Permission for the free passage of two cargoes of German dyes for American consumption—sufficient for two to three months—was granted by the British government on April 14, but thus far permit for export has not been granted by the German government.

An ample stock of coal-tar dyes, ready for export to the United States, is held by the German manufacturing firms. It awaits the opportunity and assurance of safe transport.

The importation of Swiss dyes—forming normally about 9 percent of the total imports of artificial colors, and exceeding $9,000,000 in annual value—continues in diminished volume. The value during the March quarter, 1915, was $191,000.

The existing American coal-tar chemical industry is making every effort to increase its output, and is rapidly overcoming the handicap resultant from its dependence in the past on German intermediates. This output will steadily increase with each passing week from now on.

An ample supply of American coal-tar crudes is assured for the prospective needs of dye-stuff manufacturers.

The American manufacture of aniline and other coal-tar intermediates, from American crudes, has been started upon a generous scale by all existing dye-stuff works, and by five new plants specially devoted to this field. Several other works are in process of erection or in contemplation.

The foundations for a genuine American coal-tar chemical industry are apparently being laid.

This industry can supply only a small share of the American demand for the current year, but is susceptible of steady and relatively rapid expansion.

No provision is yet made for the American manufacture of alizarin or of synthetic indigo.

American consumers of artificial dyestuffs are promptly taking steps to use natural dyestuffs and mineral colors during the time that the output of American dyes is necessarily limited.

American manufacturers of natural dyestuffs in the form of pastes, extracts, etc., are making adequate preparations to supply the expected demand. They are providing ample instruction in the modern approved methods of using vegetable dyes.

There is a general recognition of the fact that the prospective scarcity of artificial dyestuffs is due to circumstances entirely beyond the control of the American government and of the American color industry, and that both are making every effort to lessen the inevitable hardships attendant upon the unprecendented conditions.

Consumers of dyestuffs are resolutely adjusting manufacturing processes, so that they may be prepared in time to revert to the use of natural dyestuffs or mineral colors with a minimum of friction should the necessity arise. Consumers of dyed materials are good-humoredly accommodating themselves to a prospective limitation in the gamut of colors. All sense of hardship disappears before the huge pall of misery and suffering hanging over the countries now engaged in the struggle that has caused this temporary famine in a class of materials almost indispensable to many American industries.

IS A SELF-CONTAINED AMERICAN COAL-TAR INDUSTRY PROBABLE?

The spontaneous effort on the part of American capital and enterprise to meet the exigencies of the present emergency reveals the existence of dormant possibilities of far-reaching importance.

Adequate steps have been taken to assure an abundant supply of all the coal-tar crudes needed by a well-rounded American coal-tar industry as fast as the demand develops.

A strong effort is being made to establish upon a firm basis the manufacture of a wide range of American coal-tar intermediates.

The manufacture of a limited number of staple coal-tar dyes is being pushed with remarkable energy, and the number of these dyes promises to increase steadily.

Evidently much has been done during the last few months to lay the foundations of a genuine national industry, capable ultimately of meeting the great mass of American demands for artificial dyestuffs.

Unquestionably much of the capital invested during the last few months has been in the nature of a speculation. At current rates for aniline and for finished dyestuffs there was a fair chance of quickly covering the cost of a new plant, of making a good profit, and of being in a satisfactory shape at the return of normal conditions to embark in competitive manufacture under favoring circumstances.

Numerous interviews with those who have participated in these preliminary steps in the evolution of a national industry have brought to light a marked confidence on their part in the final success of the undertaking, provided the capital invested is exposed to no more danger than that involved in fair and open competition with foreign manufacturers of dyestuffs.

Capital hesitates under existing conditions to embark heavily in an undertaking where there is a strong probability, if not a certainty, that upon the return of normal conditions an incipient, half-developed American industry would be exposed to prolonged and relentless underselling by foreign competitors possessing almost boundless resources, financial and technical.

There is a very strong conviction among those experienced in the industry and among those just entering it that the majority of the coal-tar intermediates required in making dyes, and the great bulk of the coal-tar dyes now imported from

Europe, can be profitably manufactured on American soil under existing tariff rates if there is adequate statutory protection against the so-called "dumping" of foreign wares; or, in other words, protection against unfair competition in restraint of trade by persons or firms outside of American jurisdiction.

Whether public opinion will recognize general legislation in this direction as of urgent necessity remains to be seen. There seems, however, to be no question but that ample capital is available for the needs of an American coal-tar chemical industry, and that a large measure of enterprise and technical skill is ready to enter the new field, provided this one serious obstacle is definitely removed.

There are no plans in view at present for any attempt to establish in our country the manufacture of those coal-tar dyes which for a number of years have been upon the free list, namely, synthetic indigo, synthetic alizarin, and the various anthracene and carbazol colors. They constitute about 20 percent of our imports of foreign dyes. The establishment of works for producing these colors can profitably be postponed for a few years, as the complete installation of adequate plants to produce the remaining 80 percent of artificial dyes involves problems not to be solved entirely in one or two years.

After thus summarizing the points brought out in his report it is well to call attention to the details as they are set forth by Dr. Norton, covering the present supplies, activity of American manufacture and the present output of finished coal-tar dyes. Mention is also made by Dr. Norton of the educational propaganda which he seeks to demonstrate is necessary to a complete understanding of the requirements of the situation. This part of Dr. Norton's report is as follows:

The scarcity of artificial dyestuffs is being felt more and more acutely each day throughout the country. The great textile interests, the manufacturers of paper, ink, varnish, pigments, leather articles, feathers, etc., find it increasingly difficult to obtain needed supplies of colors. Many brands have completely disappeared from the market. Small supplies of Swiss coal-tar dyes, shipped via Bordeaux, are still received. Since March 19 no shipments from Germany have entered American ports.

HOW CONSUMERS ARE FACING THE SITUATION.

Some large consumers of dyestuffs were far-sighted enough to lay in very heavy supplies immediately after the outbreak of the European war. One of the largest textile firms in New England has now on hand a stock adequate for its needs until the beginning of next winter. There are a few other houses similarly supplied, but the number is very limited. Most of the textile and other works dependent upon dyestuffs have not attempted to carry a reserve above what would cover normal consumption for a period of about two months. Such reserves have tended to decrease as a result of the restricted distribution from the stocks of importing agencies. The great mass of consumers of foreign-made dyes will probably have exhausted their supplies by the middle of July, 1915, under existing conditions.

The majority of such consumers appear to have begun promptly to make preparations for the inevitable changes following a cessation in the customary supply of colors. These changes are manifold in their nature. They involve alterations and modifications in styles and color schemes, the utilization of dyeing materials requiring unfamiliar methods of application and a more or less serious

dislocation and readjustment of all phases of manufacture dependent upon the element of color.

Careful attention has been given to the supplies of aniline dyes that the few American manufacturers of such products are able to place upon the market in the immediate future. In most cases the technical staff is earnestly studying the problems connected with a temporary use of natural dyestuffs.

ACTIVITY OF AMERICAN MANUFACTURERS.

In all this period of uncertainty and anxiety, when vast business interests are threatened at a vital point, there is something decidedly cheering in the enterprise and intelligence being brought to bear to solve the difficult problem in a genuinely national way.

With each added week since the shipment of German dyes has been placed under embargo, and each successive indication that a lengthy period must probably elapse before the customary machinery of supply can again be set in motion, there has been a steady growth in the feeling throughout wide circles that the time is ripe for our American coal-tar chemical industry to expand from its present very modest proportions to a position where it can become the dominant factor in meeting the needs of sister industries.

This conviction is finding practical expression in a variety of directions. A review of what is being done shows clearly that not only is every effort being made to meet the urgent demands of a critical situation, but that the foundations are being laid for the more permanent evolution, along natural and healthful lines, of a distinctly American color industry, using American raw material and meeting the bulk of American needs.

The three phases of the complete industry are the production of coal-tar "crudes," of "intermediates" or semi-manufactured compounds, and finished dyes. Along all three lines pronounced progress has been made during the last few months.

MANUFACTURE OF COAL-TAR CRUDES.

The erection of adequate recovery plants in connection with coke works is making rapid progress. In addition to a list of such plants given in Commerce Reports for April 20, 1915, mention may be made of the new Laclede Coke Works at St. Louis, built at an expense of $2,000,000. Active operations begin June 1. The daily consumption of coal is 1,000 tons. Ample provision is made for the collection of by-products. The large Zenith Coke Works at Duluth have recently completed the installation of a benzol-recovery plant. Within a few weeks the daily output of benzol from American coke works will exceed fifty tons. Inquiries made at the Bureau of Foreign and Domestic Commerce regarding constructors of by-product recovery apparatus show that there is a widespread interest in stopping the current wastage of a valuable by-product and in insuring an increased supply of raw material for the use of dyestuff manufacturers.

Under ordinary circumstances this rapid development in the output of benzol, naphthalene and the other important crudes would have meant an oversupply. As it is, the demand for benzol and for toluol in the manufacture of high explosives, chiefly in the forms of picric acid and of trinitrotoluol, has become so

pressing that the current prices for the two hydrocarbons, when not covered by contract, are at least quadruple those prevailing a year ago.

This circumstance hampers to some extent the efforts of those engaged in the manufacture of intermediates. The price of naphthalene, also, has rapidly risen during the last few months. Before the war two-thirds of our current consumption was imported from Great Britain and Germany. It is probable that with the steady expansion of by-product recovery plants in the coke industry and the enlargement of the facilities in the work for separating and purifying the various crudes, prices will now begin to fall, at least for benzol and naphthalene.

PRODUCTION OF INTERMEDIATES.

The manufacture of intermediates is actually the most difficult part of the whole problem connected with the dyestuff industry. The production of finished dyes from the various intermediates is in most cases relatively much simpler than the transformation of crudes into intermediates. Hitherto American makers of artificial dyestuffs have depended almost exclusively upon intermediates of German origin. Since the outbreak of the war in Europe it has become clearly evident that the manufacture of the leading intermediates on a generous scale is necessary to the continued activity of American dyestuff plants and the evolution of an independent, self-contained industry.

ANILINE OIL.

The most important intermediate is aniline. The equipment of a large plant for the manufacture of this product by the Benzol Products Company has been the most important factor in the situation. The output of the works at Frankford and Marcus Hook, in Pennsylvania, is now sufficient to meet the needs of American dyestuff makers. The Edison Company has likewise established a large plant for the production of aniline at Orange, N. J. It is in active operation and will be enlarged.

The E. I. du Pont de Nemours Powder Company of Wilmington, Del., has acquired the large works of the Bayway Distilling Company at Elizabeth, N. J., used for rectifying and preparing pure benzol and toluol, and has arranged for manufacturing aniline from such benzol as may not be required in the production of high explosives.

At Elizabeth, also the Midvale Chemical Works of St. Louis is erecting a large plant destined for the manufacture of aniline and other intermediates, and ultimately of finished dyestuffs. The plans are extensive and include separate buildings for each product.

It is plain that very ample provision is being made for the production of aniline on a large scale. There will be an adequate supply for manufacturers who are engaged in the preparation of more complex intermediates derived from aniline —dimethyl-aniline, etc.—and of the aniline dyes made from them. There will also probably be a large amount of aniline salt available to use in dyeing aniline black.

NATURE OF CONTRACTS FOR INTERMEDIATES.

The output of these aniline works is largely contracted for ahead. A typical contract runs for three years, beginning with July 1, 1915. The buyer fixes in the month of May, preceding each year, the amount of aniline required monthly,

during the twelve months commencing July 1. This amount may be increased or diminished in any month by the buyer to the extent of 5 percent. He may not increase his monthly average for an ensuing year by more than 10 percent except at the option of the seller. Subject to these conditions the buyer purchases from the seller all aniline oil to be used by him during the three years. The price may vary between 10.93 cents and 25 cents per pound during 1915 and between 10.93 and 15 cents after January 1, 1916. It is to be regulated "by the fair, average market price in the United States, as the same may be determined by competitive offerings and sale." The contract "embodies the terms of a co-operative effort, which it is intended will lead to the establishing in the United States of a coal-tar chemical industry. It is entered into by the buyer with the intent of furnishing the seller with a firm outlet, at a fair price, for a large portion of his production during the currency hereof, and with a view of encouraging the seller to embark and continue in the manufacture of aniline oil and other derivatives of crude benzol on a large and permanent scale; and in order that the buyer may derive the benefits consequent upon securing at a fair price an ample, adequate and permanently regular supply of prime aniline oil of domestic manufacture on a preferential basis."

A contract of this nature appears to be regarded as well adapted to meet the exigencies of the situation and has been readily accepted by users of aniline. It relieves dyestuff manufacturers from the responsibility of providing their most important intermediate, and leaves them free to concentrate their efforts upon products of a more complex nature, involving a higher grade of technical skill and operations of a more difficult character. At the same time the American aniline industry has three years' leeway to establish itself so firmly that it may easily resist all foreign competition of a legitimate character.

Aniline was sold in American markets at 10 cents per pound a year ago. Evidently a minimum of about 11 cents is regarded as the lowest price at which it can be produced in this country at a fair profit.

OTHER INTERMEDIATES.

The American manufacturers of coal-tar dyes have taken up seriously the production of those intermediates needed to make the more important colors which they have hitherto furnished to the American trade.

The Schoellkopf, Hartford & Hanna Company, at Buffalo, the oldest and largest of the American establishments, started last autumn extensive preparations in this field. It has now seven complete plants for the preparation of various intermediates. The attempt has not been made to produce at once all of the numerous intermediates that were formerly imported from Germany. A sufficient variety, however, is now in regular process of manufacture to enable the company to produce regularly such colors as formed the bulk of its output before the war.

This policy is evidently dictated by the circumstances, which plainly require in the interests of American consumers that there should be a maximum output in the shortest time possible of a small group of recognized staple colors.

Essentially the same policy has guided the activity of the smaller plants. The W. Beckers' Aniline and Chemical Company, at Brooklyn, is erecting twenty-

three buildings in its new plant. Of these seven are completed and manufacturing operations have already been started. The firm will make all of the fourteen intermediates required in the production of the group of dyes that it carried on successfully before the war.

The same is also true of Heller & Merz and of the Central Dyestuff Company, of Newark, N. J. Each of these two firms is erecting commodious new buildings and starting the manufacture of the intermediates formerly imported from abroad.

In addition two new companies have been organized for the manufacture of coal-tar products, the American Synthetic Color Company, at Stamford, Conn., and the Standard Aniline Company, at Wappingers Falls, N. Y. Both have well-equipped plants and have already begun the manufacture of intermediates, delaying for the time being any attempt to turn out finished dyes.

The more important intermediates hitherto imported from Germany and now being manufactured regularly in the United States are: Aniline oil and salts, A and B naphthols, para nitraniline, dinitrobenzol, dinitrotoluol, toluidine, nitrotoluidines, toluylenediamine, A and B naphthylamines, phenylenediamine, phthalic acid, acetyl-salicylic acid, salicylic acid.

The names of the intermediates are arranged in the order of the extent to which they have been imported, aniline leading the list.

It is also of interest to know that one manufacturer has found it feasible to make a very satisfactory grade of dinitrochlor-benzol, the all-important intermediate for the production of fast sulphur black, a dye now used in vast amounts in this country, especially for hosiery.

OUTPUT OF FINISHED COAL-TAR DYES.

Of prime importance to the numerous categories of consumers of dyestuffs is the question, How far will American color works be able to meet the deluge of demands as the date approaches when the supply of German-made dyes will be entirely exhausted?

There is no question but that from now on each day will see an increased output of American-made coal tar colors.

The large works at Buffalo are now running night and day, busying six hundred operatives. The volume of the output is already double what it was before the war. Manufacture is concentrated upon a few staple dyes, chiefly in demand, the lack of which would be felt most severely by the great textile interests. This firm has brought out a direct black capable of replacing satisfactorily, as far as quality is concerned, both aniline black and sulphur black. It is felt that the use of this dye, along with the rapidly increasing output of aniline available for aniline black, will go far to lessen the hardships attendant upon a complete disappearance of German-made sulphur blacks from the market.

The smaller companies at Newark are straining every nerve to bring their output up to the normal amount manufactured regularly before the war, and hope soon to advance far beyond those figures.

It will probably require more than two months for the Brooklyn plant to attain the volume of output customary before the war and before the disastrous ex-

plosion and fire of last autumn. There is every indication that these works will rapidly expand and become an important factor in the situation.

E. C. Klipstein, of 644 Greenwich street, New York City, is meeting with success in establishing the manufacture of the oldest sulphur color, Cachou de Laval, a fast brown susceptible of many applications, and is extending operations to other sulphur colors.

The American branch of the famous Bayer Company, one of the leading German dyestuff firms, is located at Rensselaer, N. Y. It has been practically closed for some months, but will resume active operations on July 1. Prior to the war the firm manufactured nigrosines, alkali blue and a few other colors especially in favor in the American market. The intermediates required were imported from Germany. The company now plans to resume the manufacture of the same colors, making also the needed intermediates from American crudes. The firm will employ 350 operatives, a part of whom, however, will be occupied in the manufacture of coal-tar pharmaceutical specialties owned by the Bayer Company —aspirin, phenacetin, etc.

THE USE OF NATURAL DYESTUFFS.

The combined efforts of these works will unquestionably do much to mitigate the difficulties inevitable upon a cessation of a supply of German dyes. Still, at the best, they can replace for the next few months, or even for a year, only a relatively small quantity of the lacking colors.

This fact has been quickly recognized by large consumers of dyestuffs and by the group of firms devoted to the production of dyewood extracts. The latter are making ample preparations for meeting heavy demands during the coming months. The four establishments extracting American quercitron are in a position to expand their output rapidly. The supply of cutch seems to be fairly adequate. Largely increased amounts of logwood, fustic and Brazil wood have been ordered from the West Indies and southern countries. Some difficulty is encountered in obtaining sufficient freight accommodation. Prices have risen on account of higher freights, lack of practiced woodchoppers, the temporary interruption in the export of logwood from Mexico and the enormously increased demand for dyewoods from Great Britain to meet the dyestuff famine now threatening British textile interests.

The demand for natural dyestuffs by American mills has already set in. One large dyewood establishment has increased its sales by 25 percent during the last few months. Another reports that the current orders for logwood extract are 50 percent greater than during last autumn, orders for quercitron, fustic and cutch have tripled, and those for hypernic (brazilwood, etc.) have doubled.

ESTIMATION OF SUGAR IN URINE BY BANG'S METHOD.*

WM. GRAY, PH. G.

Bang's solution, for the quantitative determination of sugar in urine, introduced to medical and chemical literature about six years ago, has been well received by physicians and analysts in Chicago, and its use as a delicate and very accurate reagent is spreading.

PREPARATION OF BANG'S SOLUTION.

First prepare a concentrated solution of copper sulphate in distilled water, using 250 grams in 1500 cc. of water. The copper sulphate should be chemically pure and contain 5 molecules of water. The amount of copper present should be determined by electrolysis. After the determination of the exact amount of copper in the solution, a calculation should be made as to the number of cc. of solution containing 25 grams of copper sulphate. The number of cc. may be more or less than 150, according to the copper sulphate employed. Let us say, for example, that it takes 154.2 cc. instead of 150 cc. You may now place a label on the stock bottle reading, 154.2 cc. equals 25 grams $CuSO_4+5H_2O$.

You are now ready to make the two solutions employed in the reagent.

Solution No. 1.—Weigh accurately into a beaker 500 grams potassium carbonate, 400 grams potassium sulphocyanate, 100 grams potassium bicarbonate and dissolve in 1200 cc. of distilled water at 60° C. The salts should be chemically pure. When dissolved, place in a 2 liter volumetric flask, reduce temperature to 30° C. and run in, slowly, by means of a burette, 154.2 cc. of the concentrated copper solution, shaking the mixture while the copper is being added. This is very necessary to prevent precipitation. Finally add enough distilled water to make 2 liters.

Solution No. 2.—Dissolve 200 grams potassium sulphocyanate and 6.55 grams hydroxylamine sulphate in distilled water at ordinary temperature to make 2 liters of solution.

Allow both solutions to stand over night, then titrate solution No. 2 against No. 1 and balance so that 50 cc. of No. 2 will exactly decolorize 50 cc. of No. 1.

The operation of this reagent is dependent upon the well-known reducing powers of sugar, as found in urine, and of hydroxylamine. When urine containing sugar is added to the alkaline copper solution, the sugar reduces the blue cupric salt to the yellowish cuprous salt, the amount of cupric salt so reduced depending upon the amount of sugar present. The amount of unreduced cupric salt present is then determined by the amount of hydroxylamine solution necessary to complete the entire reduction.

THE APPLICATION OF THE TEST.

1. Measure accurately 10 cc. of urine into a 200 cc. Jena flask.
2. Add to the urine exactly 50 cc. of solution No. 1 (blue copper solution).
3. Heat this flask on a wire gauze over a Bunsen flame so regulated that the flame turns a small spot of the gauze red. Protect flame from air currents.
4. After boiling commences, allow to boil for exactly three minutes.

* Read before Chicago Branch, April 27, 1915.

Caution—If the urine contains more than 0.6 percent of sugar, the blue color will be entirely destroyed. If the blue color turns yellowish on boiling, a smaller amount of urine must be used. Take 2 or 5 cc. of urine diluted with water to 10 cc. and repeat the operations this far.

5. Cool flask and contents to room temperature, quickly, by immersing the flask in cold water.

6. Titrate the contents of the flask with No. 2 solution (hydroxylamine solution) until the blue color is exactly decolorized. This titration should be so conducted that the solution runs from the burette rapidly, but in drops.

7. From the number of cc. of No. 2 solution used, calculate, from the appended table, the sugar in milligrams in the amount of urine used.

BANG'S TABLE OF REDUCTION EQUIVALENTS.

Cc hydroxylamine solution used	Mg. sugar represented	Cc hydroxylamine solution used	Mg. sugar represented	Cc hydroxylamine solution used	Mg. sugar represented	Cc hydroxylamine solution used	Mg. sugar represented
0.75	60.0	13.00	39.0	25.50	23.5	38.00	10.4
1.00	59.4	13.50	38.3	26.00	22.9	38.50	9.9
1.50	58.4	14.00	37.7	26.50	22.3	39.00	9.4
2.00	57.3	14.50	37.1	27.00	21.8	39.50	9.0
2.50	56.2	15.00	36.4	27.50	21.2	40.00	8.5
3.00	55.0	15.50	35.8	28.00	20.7	40.50	8.1
3.50	54.3	16.00	35.1	28.50	20.1	41.00	7.6
4.00	53.4	16.50	34.5	29.00	19.6	41.50	7.2
4.50	52.6	17.00	33.9	29.50	19.1	42.00	6.7
5.00	51.6	17.50	33.3	30.00	18.6	42.50	6.3
5.50	50.7	18.00	32.6	30.50	18.0	43.00	5.8
6.00	49.8	18.50	32.0	31.00	17.5	43.50	5.4
6.50	48.9	19.00	31.4	31.50	17.0	44.00	4.9
7.00	48.0	19.50	30.8	32.00	16.5	44.50	4.5
7.50	47.2	20.00	30.2	32.50	15.9	45.00	4.1
8.00	46.3	20.50	29.6	33.00	15.4	45.50	3.7
8.50	45.5	21.00	29.0	33.50	14.9	46.00	3.3
9.00	44.7	21.50	28.3	34.00	14.4	46.50	2.9
9.50	44.0	22.00	27.7	34.50	13.9	47.00	2.5
10.00	43.3	22.50	27.1	35.00	13.4	47.50	2.1
10.50	42.5	23.00	26.5	35.50	12.9	48.00	1.7
11.00	41.8	23.50	25.8	36.00	12.4	48.50	1.3
11.50	41.1	24.00	25.2	36.50	11.9	49.00	0.9
12.00	40.4	24.50	24.6	37.00	11.4	49.50	0.5
12.50	39.7	25.00	24.1	37.50	10.9	50.00	0.0

PUSHING BEYOND THE HALF-WAY MARK AND WHAT AM I DOING?

ALFRED W. PAULEY, ST. LOUIS, MO.

Chief among the characteristics that carry men past the half-way mark on the road to success is eagerness to keep on learning more about business methods and principles. The ablest men are constant students. They agree with the statement recently made by the treasurer of a large steel corporation: "I have been in business for about thirty years and if my business experience has taught me one thing, it is this: *'That the more a man knows about business principles*

and methods the more he is worth to himself, to his employer, and to his business associates.'"

WHAT AM I DOING?

Any pharmacist can look around in his own line and see prizes only a little distance ahead of him and he can likewise see plenty of pitfalls if he is watchful. To win the prizes and avoid the pitfalls, a man must act under the guidance of sound business principle. A progressive pharmacist should ask himself this question: "What am I doing day by day, week by week, or year by year, to build up my personal assets, my business knowledge and my producing ability? Am I directing my personal career with as much intelligence and foresight as a capable business manager shows in directing the affairs of his concern?"

Retail merchandising and methods employed to accomplish specific results have been problems ever since the beginning of time. The dealers in the time of Nero were as much concerned about retail merchandising as we are to-day and before the Civil War, they likewise had problems to solve similar to those of present date. Yet it seems as though competition was not as keen as it is to-day and in consequence, we are obliged to give this matter more attention from a scientific standpoint than our ancestors did. In consequence we look to the experienced business man for advice. As we look to the experienced business man for advice, so do the prospective customers of retail drug stores depend largely upon the suggestion of your show-windows and show-cases; therefore it is essential that in connection with salesmanship and advertising, we consider show-case and show-window displays. Salesmanship and advertising are so closely allied that it is almost impossible for us to consider one of these subjects without the other. Advertising is salesmanship plus publicity, while salesmanship is advertising plus getting the order. If it is true that salesmanship and advertising are so closely allied that we must consider them jointly, then we must likewise consider the silent factors, namely, the window and show-cases.

Before we go into this matter any further, let us consider the elements of a sale, and the steps to a sale.

Elements of a sale
- Salesman
- The Article or Merchandise
- The Purchaser

Steps to a sale
- Secure Attention
- Inspire Confidence
- Create a Desire

From the foregoing remarks we plainly see that there is a direct relation between the salesman and the silent salesman. Therefore we should consider the silent salesman, namely, the show-window and the show-case, very important factors and in connection with these factors there are such things as decorating, illuminating, special displays, backgrounds and signs to be considered. The show-windows and show-cases really act as suggestions and work in with your general line of advertising, and therefore your windows should be made up so as to back up your newspaper or circular advertising. You may advertise in the very best way, without the desired results, and take that same medium and sup-

plement it by a window display, and a show-case display, and get far better results, as we all know that we are dealing mainly with the human mind through the medium of suggestion. Suggestion is found in its simplest form in the association of words. The name *Ingersoll* suggests a watch, *Colgate* suggests soap, *Ford* suggests motor car, because by long familiarity with these combinations we have come to think of one part in connection with the other, and it is almost impossible to separate them. It may be noted in passing that the particular word suggests the general but that the general does not always suggest the particular individual. Watch does not necessarily suggest *Ingersoll* nor motor car, *Ford.* All words, however, have their associations. We take common maxims and repeat the first part of it and the mind implies the rest. "All's well,"— "It is an ill wind,"— "Early to bed, early to rise," and so forth. In a novel it is no longer necessary to put at the end "they are married and lived happy afterwards." All we need is the slightest term in the direction of an engagement; not even the spoken "yes"; so with many jokes, the listener fills in the ending from his experience. Suggestion is often used in advertising in similar ways and particularly is this true of show-window and show-case suggestion, it being directly allied with salesmanship and advertising, becoming inseparable for perfect results. Your windows first of all being silent salesmen should be so utilized to bring you fair returns and should be used with the same intent that you have in mind when writing your advertisement; namely, to attract attention, inspire confidence and create desire, which leads on to the sale. Your results will be in proportion to the attractiveness of your display. This does not necessarily mean that you must spend a great amount of money to put in fancy displays, for a display may be made attractive by arranging the merchandise so as to appeal to the customer, and the customer once attracted into your store, may add materially to your sales, provided proper salesmanship is exercised. You therefore must direct your attention to the method of decorating and arranging your merchandise in a tasty and attractive manner, giving due consideration to color harmony. Every pharmacist should have a general knowledge of the principal colors used in decorating and apply the rules of harmony and contrast, their formation and influence upon the eye. Psychological experiments prove that red is a color which atttracts best. When we look upon a painting, red is a color which we see first. As we look along the railroad yards at night, how plain the red lights up above the signals are; red, therefore, is one of the essential colors in making attractive displays. Red and green harmonize well; yellow and green likewise; yellow alone is a pretty color; orange contrasts with black; purple looks rich with gold; green harmonizes with yellow; pink is a good summer color; blue is a very soothing color; gold contrasts with any dark color; while black is very heavy and alone does not make up well; while white is always appropriate and can be combined with practically any color and harmonize.

LIGHTING.

The show-windows properly illuminated will add materially to the attractiveness of your display; money spent for proper illumination is well spent. Arrange your lights in your show-windows so as to avoid shadows.

BACKGROUNDS.

With your windows enclosed, it will not be necessary to build special backgrounds, provided they are made of attractive material. Otherwise they should be decorated with a background similar to that which should be used in open windows. Special displays should be made from time to time which you should plan before you trim your windows, and considerable thought given to same in order that special displays may serve as special attractions: Easter displays with chickens and rabbits; Fourth of July displays; Thanksgiving displays; Washington's Birthday displays all serve as good advertising mediums, using in connection merchandise that is seasonable.

SIGNS.

Signs are absolutely necessary for every window display as a show-window without a sign is like bread without butter. All window displays should have this silent salesman talk; prominently displayed in the way of a sign. Window strips are exceptionally good for bringing out special features in connection with the soda fountain, cigars and sundry items.

INTERIOR DISPLAY.

Interior display of both show-case as well as general decorations is usually neglected by the average druggist and these features should have careful consideration as the attractiveness of the store depends largely upon the manner in which the interior is decorated. While the main interior decoration should consist of well arranged show cases, yet displays on your show-cases add materially to the attractiveness of your displays, giving it this "merchandisey" effect that a commercial drug store of to-day is endeavoring to have. Then let us repeat what we have already said in just a few words: Advertising supplements salesmanship; show-window displays supplement advertising; show-case displays supplement show-window displays.

NOTE ON THE USE OF COLLOIDAL IRON IN THE DETERMINATION OF LACTOSE IN MILK.*

REUBEN L. HILL.

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The method described below has the advantage of being within the reach of the ordinary laboratory student; it requires comparatively little time and gives very accurate results.

In clarifying the milk, a 10 per cent solution of colloidal iron (dialyzed ferric hydroxide) is used. By adding the proper amount of colloidal iron, all the proteins of the milk are completely precipitated and can be rapidly filtered off leaving a perfectly clear colorless filtrate.

* Journal of Biological Chemistry, March, 1915, 175.

The method is as follows: To a 10 gram sample of milk, which has been diluted to about 25 cc., about 3 cc. of a 10 percent solution of colloidal iron are added. The amount of colloidal iron necessary depends upon the composition of the milk and can be accurately determined by adding the last portion drop by drop, and agitating after each addition.

If the precipitation is complete, a clear supernatant liquid separates out from the flocculent precipitate; if too little has been added, the supernatant liquid will appear milky; if too much, it will have a reddish tinge.

The sample is next filtered into a 100 cc. volumetric flask, and the precipitate thoroughly washed with distilled water until the filtrate and washings aggregate about 100 cc. The flask is then filled to the mark and the percentage of lactose determined by Benedict's quantitative method.[1] About 16 cc. of the diluted sample will be required to reduce completely 25 cc. of Benedict's quantitative solution.

A very convenient method of analysis is given by Cole,[2] in which a 4 ounce flask is used instead of an evaporating dish. The wide mouthed Jena 150 cc. flat bottomed flasks are very convenient for the determination. The flask is fitted into the 2.5 inch ring of a retort stand, and the height above the Bunsen burner so arranged that the contents of the flask will be kept briskly boiling with a small flame. Two flasks can be run simultaneously from the same stand.

Three to four grams of anhydrous sodium carbonate are dissolved, by means of heat, in 25 cc. of *twice diluted*[3] Benedict's solution, to which a little powdered pumice has been added. About 14 cc. of the sugar solution are then rapidly added from a burette. Boiling is continued for at least one-half minute before the addition of more lactose solution.

When reduction is complete the supernatant liquid will have a slight yellowish tinge to which the blue color very slowly returns. If the end-point has been underestimated, it will have a blue or greenish tinge that rapidly becomes bluer. With a little practice, and by adding the last portion a drop at a time, and boiling one-half minute after each addition, the end-point can be determined to within one drop.

Twenty-five cc. of Benedict's quantitative solution are completely reduced by 0.0676 of a gram of anhydrous lactose. Since the milk has been ten-fold diluted, 0.0676 divided by the number of cc. of diluted lactose solution used, multiplied by ten, will give the percentage of lactose in the milk. If 16.1 cc. of lactose solution were required, then $16.1 : 0.0676 :: X : 10 = 4.20$ percent.

That very accurate results can be obtained by using this method may be seen from the following tables. Table I shows the comparison between duplicate samples of different milks. Table II shows the effect of the addition of the small quantities of lactose to the milk before analysis.

[1] S. R. Benedict, Jour. Am. Med. Assn., lvii, p. 1193, 1911. P. B. Hawk: Practical Physiological Chemistry, 4th edition, Philadelphia, 1912, p. 386.

[2] S. W. Cole: Practical Physiological Chemistry, St. Louis, 1914, p. 53.

[3] I prefer to dilute 25 cc. of Benedict's solution to at least 50 cc., for I obtain a more accurate end-point with dilute than with concentrated solutions.

TABLE I.

Comparison between duplicate samples of different milks.

Sample No.	Anhydrous Lactose in Milk 1 Percent	Lactose in Milk 2 Percent	Lactose in Milk 3 Percent
1	4.08	4.19	4.23
2	4.11	4.20	4.20
3	4.10	4.20	4.22

TABLE II.

Effect of the addition of lactose to 10 cc. samples of milk.

Sample No.	Sample ten times diluted, required to reduce 25 cc. of Benedict's Quantitative Solution. cc.	Anhydrous Lactose in Sample gm.	Anhydrous Lactose Added gm.	Added Lactose Recovered Percent
Milk 4				
1	16.7	0.405	None	
2	14.9	0.454	0.050	98
3	15.0	0.451	0.050	92
Milk 5				
1	16.1	0.420	None	
2	14.4	0.469	0.050	98
Milk 6				
1	16.4	0.413	None	
2	7.5	0.902	0.505	97
3	10.2	0.664	0.2525	99
4	10.1	0.670	0.2525	100.8

A FOLDING PAPER DEMONSTRATING CASE FOR BACTERIAL CULTURES—A PAPER INSET ANIMAL NECROPSY TRAY.

M. R. SMIRNOW, M D., NEW HAVEN, CONN., IN JOURNAL A. M. A.

A bacteriologist frequently finds occasion to demonstrate cultures of microorganisms, either to student classes within or near the laboratory or at meetings at some distance. In such circumstances it would be desirable to have not only some light and compact receptacle for such cultures, but also one in which the cultures could be shown to the best advantage.

It was for just such an occasion that, in looking about for a proper demonstrating case, I finally invented the form of folding paper display case shown in Fig. 1.

This case is easily made by using a No. 160 white card paper. The design is mapped out, cut and creased, as indicated in Fig. 2. The holes are punched out with a 5/8-inch die. The case is then folded, fastened and put away until it is to be used. When the cultures to be demonstrated are ready they are placed in proper order into the case, and any description desired may be written directly on the face of the case at both its upper and lower margins. All dimensions except

the length are constant for any size display case desired, the length varying with the number of tubes the case is to hold, requiring 1¼ inches for each tube. The height of the case is 6¼ inches and will hold the regulation size culture tube, the cotton plugs of which are best cut down to the mouths of the tubes and sealed with paraffin.

At several meetings where the demonstration of the cultural characteristics of bacteria was desired, I have used a number of these cases of various sizes with excellent success. The advantages of this paper demonstrating case are:

1. It is of light weight, is easily constructed, and is excellently suited to demonstrating purposes.
2. It takes up little room and may be conveyed any distance, packed in a hand bag or suit case.
3. The culture tubes are separated from one another and cannot be broken.

PAPER TRAY.

This necropsy tray is intended as a convenient piece of apparatus for laboratories in which a considerable number of animal necropsies are conducted. It is designed especially with a view of permitting the least amount of handling of the animal. Its oiled paper inset affords no opportunity for the spread of blood or other fluids, and acts as a wrapping material for the remains that are to be destroyed.

The tray proper is constructed of a single piece of sheet galvanized tin and measures 20 by 9 by 1½ inches for rabbits and 9 by 6 by 1½ inches for guinea pigs. The corners of the tray should be finished off by making small flaps from the ends onto the sides, riveting them in place, and soldering the seams on the inside. A double leg holder made of flat spring brass about three quarters the length of one of the ends and five-eighths inch wide is riveted to one end. The brass is made rough on the inner surface to increase it gripping power. This end of the tray is made a full quarter-inch lower than the other end or the sides of the tray in order to permit the side clamps to "ride" on the sides of the tray. The sides are somewhat lipped or flattened on their tops, measuring one-quarter inch in width. At the end farthest from the leg holder is soldered a corrugated strip of galvanized tin, about six inches in length and one-quarter inch wide, fitting exactly over this lipped surface. These corrugations, together with a spring brass clamp, are to act as leg holders for the forelegs of the animal, automatically adjusting themselves to any size animal.

This clamp is constructed of spring brass. It is made in the manner illustrated and fits loosely over the lipped edge of the side of the tray. The square portion of the clamp must be heated to permit bending, as spring brass cracks and breaks instead of bending at acute angles. The end of the clamp is so constructed that it will allow free play in its movement over the corrugations except when there is some pressure underneath the curved portions of the clamp, at which time it should catch and hold firmly.

The paper inset is best made of No. 160 oiled paper, cut to size and folded to fit the tray. All its sides are folded 1½ inches from the edge of the paper, and the corners turned to one side or the other.

The tray is simple in construction, costs very little and can be used indefinitely,

as there is nothing that requires special attention. The only things that might possibly need replacing are the brass clamps, which can be turned out by any laboratory technician. The paper insets can be folded by hand or can be supplied in quantities at little cost by some paper box manufacturer.

Though from a sanitary standpoint no special advantage can be claimed for this tray over the ordinary piece of board, newspaper and nails, always used in bacteriologic laboratories, yet the tray described acts as a much better piece of apparatus for purposes of demonstration, and adds to the general neatness in laboratory technic.

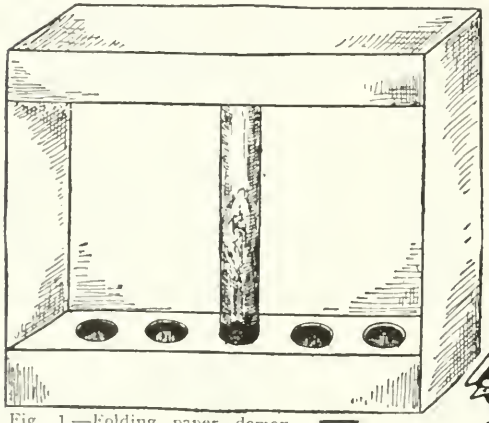


Fig. 1.—Folding paper demonstrating case for bacterial cultures

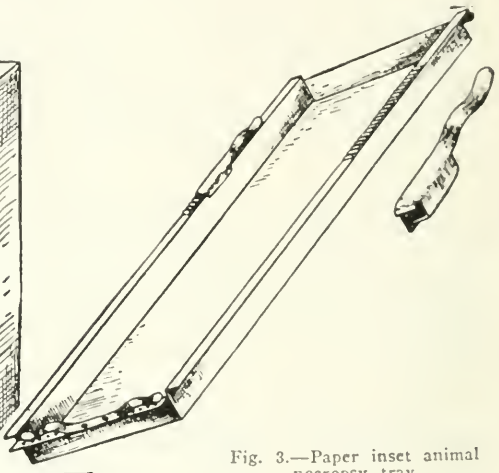


Fig. 3.—Paper inset animal necropsy tray

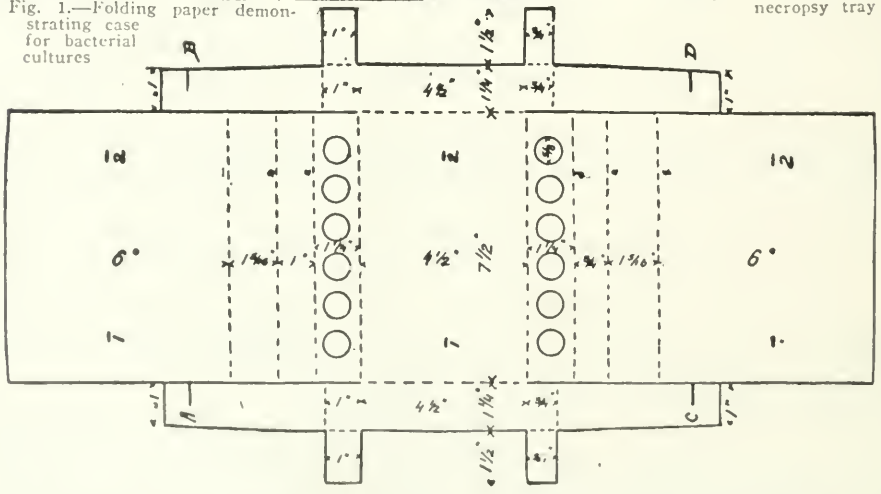


Fig. 2.—Plan of demonstrating case. A 160 pound white bristol cardboard is used. The design is mapped out according to the dimensions indicated. The cardboard is cut on all solid lines except slits marked *A, B, C and D,* also 1, 1, 1 and 2, 2, 2, which are to be done later. All dotted lines are creased with some blunt instrument, the cardboard being placed over soft wood. As many apertures as are desired are punched out, 1¾ inches for each being allowed. All creased lines are bent forward except *a, b, c, d, e* and *f,* which are to be bent backward, and are folded as in illustration. The flaps *A, B* and *C, D* should overlap; slits are cut in opposite direction, as indicated, so that they will properly lock. With a sharp instrument are cut small slits 1 and 2, which will go through three thicknesses of paper that make up the back of the case, and by which the whole is fastened with ordinary paper fasteners.

CURRENT REVIEW OF PHARMACEUTICAL JOURNALS FOR MARCH, 1915.*

E. FULLERTON COOK, P. D.

In this review, with only one or two exceptions, original articles have been abstracted.

A number of papers not referred to, dealing with scientific subjects, are printed this month, but the majority of such papers are reprinted from the Journal of the A. Ph. A. or taken from other Association proceedings.

Much attention is given this month in the American journals to discussion and explanation of the Harrison Act. The Stevens Bill, which is expected to control the "cut rate" evil also occupies attention editorially and in discussion.

In most journals a large share of space is devoted to commercial questions. Papers on salesmanship, accounting, collecting bills, system, buying, etc., etc., are predominant, and the soda fountain and its needs are also given an important place.

The journals in this respect reflect the condition of the drug business at large and this is not altogether a cause for discouragement since business methods must be improved in many stores if they would continue to exist, and we are all seeing at least a few stores where the best professional ideals are maintained and made a financial success through the application of sane and efficient business principles.

The following abstracts were selected as of sufficient interest to report:

AMERICAN DRUGGIST AND PHARMACEUTICAL RECORD.

Toilet Preparations (Page 98).—F. T. Gordon starts a series of articles on this subject, the paper in this issue being devoted chiefly to a general consideration with advice to the would-be manufacturer.

PRACTICAL DRUGGIST.

The Cultivation of Medicinal Plants.—By Fred B. Kilmer (P. 20). This is the first of a series of articles on this subject, which is of rapidly increasing importance. Dr. Kilmer reviews the work of the U. S. Department of Agriculture in this field, through the Bureau of Plant Industry, and also tells of the much more extensive development of drug cultivation in Europe. A few American manufacturers have been studying these problems and growing some drugs on a commercial scale, and he predicts that if manufacturers of medicinal products are really interested in getting better drugs, they can do so through systematic, scientific investigation and experimental cultivation, but this in some instances may require years of work.

THE AMERICAN PERFUMER.

This journal is running several interesting articles in serial form. The titles are *How Flower Concretes are Made, The Soap-Making Industry,* by Dr. E. G. Thomssen, and *Vanilla Beans,* by Wallace Mawhey. While these may not be of especial value to retail druggists they are a valuable addition to the literature on these subjects.

THE WESTERN DRUGGIST.

Several excellent articles on the business side of pharmacy are found in this issue. *Letters that will collect your accounts* (Page 75) is the title of one. In this article five form letters

* Read before Philadelphia Branch, April 13.

are given and suggestions for using them. *The making of a 100 Point Salesman* (Page 77) is also an article which will be of interest to many.

MERCK'S REPORT.

Perfumery and the Chemist, by Edward T. Beiser (Page 81). A short review, in popular style, of the development of synthetic chemistry in the field of perfumery. Many of the more common artificial perfumery materials are mentioned and their chemistry and method of production briefly outlined.

BULLETIN OF PHARMACY.

(Page 110.)—A symposium on *The best way to secure a mailing list* occupied an important place in this month's issue. The giving of a small prize, such as a calendar, pencil, etc., on the return of a coupon or card which has been mailed or distributed in the district seems to be the favorite method of obtaining a valuable mailing list.

DRUGGISTS' CIRCULAR.

(Page 153.)—The subject of *Toilet Cream manufacture* is discussed by H. C. Bradford and working formulas published for "Theatrical" "Make-Up," "Oxygenated," and "Cocoa Butter" Cold Creams, also for "Satin Cream" and Cucumber Cream and Jelly.

The formula for "Satin Cream" is unusual and may be of value to the members. It is:

Pure, sweet unsalted lard	220 gm.
Potassium hydroxide	31 gm.
Alcohol, 60 percent	10 gm.
Water	90 gm.

Dissolve the KOH in the water, pour off the clear liquid and mix it with the lard in a warm pan. Finally work in the alcohol in portions. The fat is largely saponified and the product is used chiefly for the removal of soot, dust, travel stains, etc., by being applied freely and then wiped off with a cloth.

(Page 201.)—Here will be found an interesting article on the *Drug Store Library*, by Frank Farrington. Emphasis is especially laid upon the necessity of having a good business library, books on advertising, window trimming, salesmanship, management, origin and manufacture of goods, etc. He advises proprietors to subscribe to a good trade paper for their clerks, having it sent to their homes.

(Page 203.)—Mr. M. P. Gould discusses the possibilities of advertising for a retail druggist, he pointing out the conditions under which each form of advertising may best be used.

THE PHARMACEUTICAL ERA.

(Page 97.)—Editorially the Era reviews the purposes, scope, and provisions of the Harrison Anti-narcotic Law, stating that in its application to the drug trade it is the "most important legislation ever enacted in this country."

(Pages 101 to 113.)—The "Act" and all regulations to date, issued by the Department are copied in full. An extended list is also given of official and proprietary preparations containing Opium or Coca or their derivatives which are affected by the Law.

AMERICAN JOURNAL OF PHARMACY.

The Proper Time to Collect Sanguinaria (Page 97).—O. A. Farwell of Parke, Davis & Co. made a number of examinations of Sanguinaria collected at different seasons of the year and confirmed the conclusions of Drs. Homerberg and Beringer, published several years ago, in which they stated that the rhizome was richest in alkaloid "immediately after flowering" and not "after the death of the foliage," the time for collection specified in the Pharmacopœia.

THE PACIFIC PHARMACIST.

An abstract from the Consular Report calls attention to the many recent new uses for Infusorial Earth. These consist in its use as an absorbent for nitro-glycerin in the making of dynamite, also as a non-conductor of heat in pipe coverings and fire-proof buildings, as an absorbent for liquid manures for the production of artificial fertilizers and, when boiled with shellac, as a suitable material for talking machine records

N. A. R. D. JOURNAL.

The Cultivation of Medicinal Plants (Pages 1111, 1165 and 1218) is considered by taking up individual drugs and compiling the available information from Government Bulletins and from published articles and books by those who have been studying and experimenting on this subject.

The Weekly Legislative News-Letters, by J. Leyden White, are always interesting and of much assistance to pharmacists in keeping in touch with National legislative programmes and also in understanding the purpose and scope of proposed new laws.

PHARMACEUTICAL JOURNAL OF ENGLAND.

The Chemical Industries of Germany.—By Prof. Percy Frankland (Page 353). The tremendous importance of the chemical industries of Germany is pointed out, figures being given to show production in recent years. For instance, 11,000,000 tons of crude potash salts was marketed in 1912, valued at about $44,000,000.

The statement is also made that it is believed Germany is now independent in respect to nitrate supply, since she has perfected a process whereby Ammonia is produced from hydrogen and atmospheric nitrogen under a pressure of 200 atmospheres and at 500° C. in the presence of a catalyst. The Ammonia is then converted into Nitric Acid by burning it in air in the presence of a catalyst.

Other figures are given to show the importance of the production of explosives, artificial silk (valued at $15,000,000 in 1912), synthetic organic chemicals, including dye-stuffs, etc.

REPORT OF COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, George M. Beringer, 501 Federal St., Camden, N. J.

(Continued from May Issue)

CHIRATA.

Chirata

1. The dried plant of *Swertia Chirayita* (Roxburgh) Hamilton (Fam. *Gentianeceae*).

2. Smooth; root simple, about 7 mm. thick near the crown, stem about 1 m. long, externally yellowish or purplish-brown; cylindrical near the base, quadrangular and slightly winged above, with numerous opposite, ascending branches; wood yellowish, thin, enclosing usually a large yellowish easily separable pith; leaves opposite, sessile, ovate-lanceolate, entire, five-nerved, about 6 cm. long; flowers numerous, panicled, small, with a four-lobed calyx and corolla, capsule ovoid, acute, one-celled, many-seeded; odor slight; taste intensely bitter

3. *Average dose.*—1 gm. (15 grains).

CONDURANGO.

Condurango.

1. The dried bark of *Marsdenia Condurango* Reichenbach filius (Fam. *Asclepiadaceae*).

2. In single quills or transversely curved pieces, usually from 4 to 13.5 cm. in length; bark 1 to 6 mm. in thickness; outer surface light grayish-brown to dark brown, nearly smooth and with numerous lenticels, or more or less scaly and considerably roughened, the scales soft, occasionally with brownish-black apothecia of a fungus; inner surface grayish-white or light brown, longitudinally striate; fracture short and granular or short-fibrous; odor slightly aromatic, especially marked in the fresh drug; taste bitter and aromatic.

3. Under the microscope sections of Con-

durango show a corky layer consisting of several rows of thin-walled cells, frequently with yellowish-brown contents; a layer of phelloderm of 8 to 10 rows of cells, containing either starch grains or membrane crystals of calcium oxalate, the latter in prisms, 0.010 to 0.035 mm. in length; a primary cortex of collenchyma containing chloroplasts, starch grains, or rosette aggregates of calcium oxalate, 0.015 to 0.040 mm. in diameter; a pericycle or pericambium of tangentially elongated parenchyma cells, with groups of bast-fibers and laticiferous vessels in an interrupted circle; middle bark with large groups of stone cells varying from nearly isodiametric to elongated, sometimes very irregular in form; inner bark with medullary rays 1 to 2 cells wide, numerous laticiferous cells accompanied by small groups of sieve cells, parenchyma containing either starch grains or rosette aggregates of calcium oxalate, and an occasional isolated bast-fiber or small group of stone cells.

4. *Powder*—Light, yellowish-brown; consisting chiefly of fragments of stone cells and parenchyma containing calcium oxalate crystals and starch grains; stone cells chiefly in large groups, the individual cells being more or less irregular in shape and with very thick porous walls, the lumina being usually filled with air; calcium oxalate chiefly in rosette aggregates, occasionally in single prisms, mostly from 0.015 to 0.020 mm. in diameter; starch grains mostly single, frequently 2- to 4-compound, the individual grains being from 0.003 to 0.015 mm. in diameter; bast-fibers non-lignified; very long and from 0.010 to 0.035 mm. in width; fragments of thin-walled latex tubes from 0.015 to 0.025 mm. in diameter and filled with a granular substance; fragments of cork grayish or light yellowish-brown.

5. Macerate 1 gm. of the powdered bark in 5 cc. of cold water; filter and heat the filtrate in a test-tube, it should become very cloudy, but on cooling assumes its original transparency.

6. The yield of ash should not exceed 12 percent.

CONIUM.

Conium.

1. The full grown, but unripe fruit of *Conium maculatum* Linné (Fam. *Umbelliferae*), carefully dried and preserved, and yielding, when assayed by the process given below, not less than 0.5 percent of coniine. After being kept for more than two years, Conium is unfit for use.

2. Broadly ovoid, greenish-gray, the two carpels of most of the fruits separated, each about 3 mm. long and about 1.5 mm. in diameter, ovoid, somewhat curved, the inner, flattened side marked by a deep longitudinal groove, the outer, convex side, with five pale yellow, somewhat crenate ribs, the intervening surfaces wrinkled but otherwise smooth; pericarp without oil-tubes; odor slight, but when triturated with a solution of potassium hydroxide, strong, disagreeable, and mouse-like; taste characteristic, disagreeable, afterwards somewhat acrid.

ASSAY OF CONIUM.

3. Conium, in No. 40 powder, fifteen grammes 15 gm.
 Solution of Sodium Hydroxide, fifteen cubic centimeters.... 15 cc.
 Purified Petroleum Benzin.
 Normal Hydrochloric Acid Volumetric Solution.
 Sodium Carbonate Test Solution.
 Tenth-Normal Sulphuric Acid Volumetric Solution.
 Fiftieth-Normal Potassium Hydroxide Volumetric Solution.

 Cochineal T. S. each, a sufficient quantity.

Place the Conium in a 250 cc. Erlenmeyer flask, add 150 cubic centimeters of purified petroleum benzin and then 15 cubic centimeters of solution of sodium hydroxide, insert the stopper securely, and shake the flask vigorously at frequent intervals during six hours. Allow the solution to separate and decant 100 cubic centimeters of the clear benzin solution (representing 10 gm. of the drug) into a separator; shake this out with successive portions of 20 cc., 10 cc., 5 cc. and 5 cc. of normal hydrochloric acid V. S. If a few drops of this last washing gives an alkaloidal reaction with iodine T. S., continue the shaking out with successive portions of 5 cc. each of normal hydrochloric acid V. S. until the alkaloid is all extracted. Collect the acid washing and concentrate by evaporation on a water-bath to 10 cubic centimeters, cool and transfer the liquid to a separator, then add sodium carbonate T. S. in excess. Extract the alkaloid by shaking out with successive portions of 15 cc. each of purified petroleum benzin. Separate the benzin washings and filter into a beaker. Then add exactly 10 cubic centimeters of tenth-normal sulphuric

acid V. S. and stir thoroughly for two minutes so as to mix the acid and benzin solution. Evaporate the benzin layer in a current of warm air, at a temperature not exceeding 60° C. and as soon as the benzin has disappeared, cool, add 5 drops of cochineal T. S. and titrate the acid solution with fiftieth normal potassium hydroxide. Calculate the amount of coniine neutralized by the acid by using the factor 0.0126 and multiply the result by ten to obtain the percentage of coniine in the drug.

4. *Average dose.*—0.200 gm (3 grains).

CONVALLARIA.

Convallaria.

Lily-of-the-Valley Roots.

1. The dried rhizome and roots of *Convallaria majalis* Linné (Fam. *Liliaceae*).

2. Rhizome horizontal, elongated, usually branched, cylindrical, variable in length, 1 to 3 mm. in diameter; externally yellowish-white or pale brown, with a few circular stem scars, and from the under and side portions at the nodes usually arise from 3 to 5 thin, tortuous, dark brown, branching roots; fracture short or fibrous; internally whitish; odor faint; taste sweetish, becoming bitter and acrid.

3. Under the microscope sections of the rhizome of Convallaria show an epidermal layer with a thick outer layer of cutin; a hypodermal layer of a single row of collenchyma; a cortex made up of about 20 rows of parenchyma cells, some of which contain starch and raphides of calcium oxalate; a prominent endodermis, the radial and inner walls of which are strongly thickened and lignified; inside the endodermis is an interrupted circle of collateral fibro-vascular bundles, the woody portion of which has in cross section the shape of the letter "V"; inside the circle of bundles is another interrupted circle of fibro-vascular bundles of the concentric type, the sieve tissue being surrounded by the xylem; the parenchyma cells of the pith separated by large intercellular spaces.

4. Under the microscope, transverse sections of the root of Convallaria show a hairy epidermal layer, a hypodermis of a single row of cells; a cortex of about 6 rows of cells, some of which contain starch, raphides and oil; the cells of the endodermal layer resemble those of the rhizome; fibro-vascular bundles mostly 5.

5. *Powder*—Dark brown; tending to cake on standing; consisting chiefly of cellular fragments and a few starch grains and raphides of calcium oxalate; cells of endodermis with slightly oblique ends and considerably thickened walls, lignified porous walls, fragments of tracheæ with spiral and scalariform thickenings, or with porous walls; starch grains single or compound, mostly nearly spherical, and from 0.003 to 0.012 mm. in diameter; raphides of calcium oxalate few, from 0.020 to 0.045 mm. in length.

CROCUS.

Saffron.

1. The stigmas of *Crocus sativus* Linné (Fam. *Iridaceae*), without admixture of more than 10 percent of the yellow styles and other harmless impurities. Saffron should be kept in tightly-closed containers and protected from the light.

2. Stigmas separate or three attached to the summit of the style; stigmas usually about 25 mm. in length, cornucopia-shaped, of a dark rich red color, the margin dentate or fimbriate; styles about 10 mm. in length, more or less cylindrical, solid, yellowish; odor strong, peculiarly aromatic; taste bitterish, aromatic. When chewed it colors the saliva orange-yellow.

3. Under the microscope the upper end of the stigma shows numerous cylindrical papillæ about 0.0150 mm. in length, among which should occur a few spherical pollen grains, the latter being nearly smooth, and from 0.040 to 0.072 mm. in diameter; occasionally some of the pollen grains have germinated and show pollen tubes.

4. When placed in sulphuric acid, the stigmas should be immediately colored blue, gradually changing to violet, and finally become a deep wine-red color.

5. Add 0.010 gm. of finely powdered Saffron to 100 cc. of cold water, allow it to macerate for several hours and filter; upon adding 10 cc of this filtrate to 100 cc. of water, it should give a distinct, yellow-colored solution.

6. Macerate 0.010 gm. of Saffron in 5 cc. of methyl alcohol; a deep orange color should be imparted to the liquid. Macerate 0.010 gm. of Saffron in 5 cc. of acetone, alcohol, or absolute alcohol; a distinct, lemon-yellow color should be produced. With corresponding quantities of Saffron and ether a very light lemon-yellow color should be produced. With corresponding quantities of Saffron and chloroform a very slight, yellow tinge should be imparted; and with corresponding por-

tions of Saffron and xylene, benzene, carbon disulphide and carbon tetrachloride, the solvents should remain colorless.

7. When pressed between filter paper, Saffron should not display transparent spots due to the absorption of oil.

8. Saffron should not lose more than 14 percent of its weight when dried at 100° C.

9. The yield of ash should not exceed 7.5 percent, and the ash should not be fusible.

CUPRI SULPHAS.

Cupric Sulphate. Copper Sulphate.

1. It should contain not less than 63.61, nor more than 66.79 percent of anhydrous copper sulphate, corresponding to not less than 99.5 percent of the hydrated salt, $CuSO_4+5H_2O=249.72$. It should be kept in well-stoppered bottles.

2. Copper Sulphate occurs as large, transparent, deep blue, triclinic crystals; odorless, of a nauseous metallic taste; slowly efflorescent in dry air.

3. It is freely soluble in cold and very soluble in hot water; it is slightly soluble in alcohol and freely soluble in glycerin.

4. When heated to 30° C. the salt loses part of its water of hydration and is converted into a pale blue, amorphous powder. More water is lost at 100° C. and finally at 200° C. a white, anhydrous powder remains. At a still higher temperature, sulphur dioxide and oxygen are given off, and a residue of black cupric oxide is left.

5. An aqueous solution (1 in 20) has a blue color, and shows an acid reaction with litmus.

6. On placing a drop of an aqueous solution of the salt (1 in 20) on a bright piece of iron, a red film of metallic copper will be deposited.

7. Barium chloride T. S. produces in an aqueous solution (1 in 10) a white precipitate, insoluble in hydrochloric acid.

8. On adding ammonia water to an aqueous solution of Copper Sulphate (1 in 10), drop by drop, a pale blue precipitate of cupric hydroxide will be formed, which redissolves in an excess of ammonia water, forming a deep azure-blue solution.

9. Weigh accurately about 1 gm. of unefflorescecd crystals of Copper Sulphate, dissolve it in 50 cc. of distilled water and add 4 cc. of acetic acid and 3 gm. of potassium iodide. The titration of the liberated iodine with tenth-normal sodium thiosulphate V. S., starch T. S. being used as indicator, should indicate not less than 63.61 percent of anhydrous Copper Sulphate. Each cubic centimeter of tenth-normal sodium thiosulphate V. S. used corresponds to 0.015964 gm. of anhydrous copper sulphate ($CuSO_4$).

10. Each gramme of Copper Sulphate, U. S. P., corresponds to at least 39.84 cc. of tenth-normal sodium thiosulphate V. S.

CYPRIPEDIUM.

Cypripedium. Lady Slipper Root.

1. The dried rhizome and roots of *Cypripedium hirsutum* Miller (*Cypripedium pubescens* Willdenow), or of *Cypripedium parviflorum* Salisbury (Fam. *Orchidaceae*).

2. Rhizome of horizontal growth, curved, 3 to 10 cm. long, 2 to 6 mm. thick, orange-brown to dark-brown, the upper side beset with numerous circular, cup-shaped scars, closely covered below with simple wiry roots, varying from 3 to 15 cm. in length; fracture of rhizome short, white, that of roots somewhat fibrous; odor distinct, heavy, valerian-like; taste sweetish, bitter, and somewhat pungent.

3. *Average dose.*—1 gm. (15 grains).

EUPATORIUM.

Eupatorium. Boneset.

1. The dried leaves and flowering tops of *Eupatorium perfoliatum* Linné (Fam. *Compositae*).

2. Usually more or less broken; leaves opposite, the pair united at the base, from 8 to 20 cm. long and 1.5 to 5 cm. broad, tapering regularly from near the base to an acute apex, crenate-serrate, rugosely veined, rough and bright green above, yellowish-gray-green, tomentose and resinous-dotted beneath; flower-heads small, numerous, corymbed, with a campanulate involucre of lance-linear imbricated scales and with from 10 to 15 tubular yellowish-white florets, having a bristly pappus in a single row; odor faintly aromatic; taste strongly bitter.

3. *Average dose.*—2 gm. (30 grains).

EUONYMUS.

Euonymus.

(Euonymus, U. S. P. VIII. Wahoo. Burning Bush Bark.)

1. The dried bark of the root of *Euonymus atropurpureus* Jacquin (Fam. *Celastraceae*) with not more than 3 percent of adhering wood.

2. Usually in transversely curved pieces, occasionally in single quills, 2 to 7 cm. in

length; bark, 1 to 2.5 mm. in thickness; very light in weight; outer surface grayish or light brown, somewhat wrinkled, occasionally transversely fissured from the lenticels and with scale patches of soft cork; inner surface grayish-white, longitudinally striate and somewhat porous; fracture short with silky, projecting, modified bast fibers; odor distinct; taste bitter and acrid.

3. *Powder*—Light brown; starch grains numerous, nearly spherical, 0.003 to 0.012 mm. in diameter; fragments of cork with nearly colorless thin walls; secretion cells with yellowish or brownish amorphous contents; bast fibers very long, with thin non-lignified walls possessing numerous small, more or less oblique pores; numerous fragments of parenchyma containing starch; calcium oxalate in rosette aggregates, 0.015 to 0.035 mm. in diameter, the amount in different specimens showing some variation.

EXTRACTUM CARNIS.

Extract of Beef.

1. The residue obtained from fresh beef broth by evaporation at low temperature.

2. A yellowish-brown to dark-brown, slightly acid, pasty mass having an agreeable meat-like odor and taste.

3. 25 gm. of Extract of Beef diluted to 250 cc. with distilled water yields a nearly clear solution, free from sediment. Portions of this solution should answer to the following tests:

4. 10 cc. of the solution boiled for one minute with 1.5 gm. of purified animal charcoal, the loss by evaporation restored and filtered, the filtrate produces no blue coloration when one drop is added to 3 drops of diphenylamine solution in concentrated sulphuric acid (1:100) (limit of nitrates).

5. 10 cc. of the solution when distributed over sand or asbestos and dried in a flat-bottomed porcelain dish to constant weight in an oven at a temperature of 105° C., yields a residue of not less than 0.75 gm., equivalent to 75 percent of solids in the original sample.

6. If the residue from 10 cc. of the solution be incinerated the ash must not exceed 30 percent of the residue, nor must the sodium chloride in the ash exceed 10 percent of the residue when calculated from the total chlorine as determined by the U. S. P. (Volhard) method.

7. To 100 cc. of the solution contained in a 500 cc. Kjeldahl flask, add 5 gm. of barium carbonate, 100 cc. of water and distil 100 cc., using a connecting bulb, into 10 cc. of half normal hydrochloric acid V. S. Titrate the excess of acid, using cochineal T. S. as indicator, and from the acid consumed by the distillate, calculate the percentage of nitrogen as ammonia. This must not exceed .35 percent of the total solids.

8. Transfer 25 cc. of the solution to a 100 cc. Erlenmeyer flask, add 50 cc. alcohol and shake the mixture thoroughly. When the precipitate has subsided, filter, collect the precipitate upon a 9 cm. counterpoised filter, wash the precipitate three times with a mixture of alcohol and water (2 to 1 by vol.), and then dry it to constant weight at 105° C. The weight of this precipitate must not exceed 10 percent of the total solids. (Reserve the filtrate and washing for the determination of nitrogen.)

9. To an aliquot portion of the alcoholic filtrate from the preceding test corresponding to 1 gm. of the alcohol soluble solids, add 4 cc. of sulphuric acid and evaporate to dryness in a 500 cc. Kjeldahl flask. Determine the nitrogen by the Gunning-Kjeldahl method. The amount of nitrogen thus found must not be less than 0.06 gm.

FÆX COMPRESSA.

Compressed Yeast.

1. White or yellowish-white, soft and easily broken masses, having a characteristic slightly sour odor and not more than a faintly acid reaction to litmus.

2. When examined under the microscope numerous oidium and mycoderma cells and starch grains are seen.

3. Compressed yeast should not be used unless fresh and free from mildew and musty or foul odors.

FERRI HYPOPHOSPHIS.

Ferric Hypophosphite.

1. It should contain not less than 98 percent of pure Ferric Hypophosphite ($Fe(PH_2O_2)_3$=250.90), and should be kept in well-stoppered bottles.

2. A white, or grayish-white powder, odorless and nearly tasteless; permanent in the air.

3. Soluble in 2300 parts of water at 25° C. (77° F.), and in 1200 parts of boiling water; more readily soluble in the presence of hypophosphorous acid, or in a warm, concentrated solution of an alkali citrate, forming with the latter a green solution.

4. When strongly heated in a dry test-tube,

the salt evolves spontaneously inflammable hydrogen phosphide gas, and, on complete ignition, leaves a residue of ferric pyrophosphate.

5. Ferric Hypophosphite is readily oxidized by nitric acid or other oxidizing agents.

6. If to 1 gm. of the salt 10 cc. of acetic acid be added, no effervescence should occur (absence of *carbonate*), and if the mixture be subsequently heated to boiling and filtered, the filtrate should respond to the following tests:

7. The addition of a few drops of silver nitrate T. S. to a portion of the filtrate should, upon warming, cause a brown to black coloration or precipitate. If another portion of the filtrate be added, drop by drop, to an excess of mercuric chloride, T. S., a white precipitate of mercurous chloride is formed upon gently heating.

8. Another portion of the cold filtrate should afford no turbidity with ammonium oxalate T. S. (absence of *calcium*).

9. Dissolve 1 gm. of the salt in 20 cc. of diluted hydrochloric acid, with the aid of heat, and then add 1 cc. of barium chloride, T. S. Not more than a slight turbidity should be produced (sulphate).

10. If 0.5 gm. of the salt be boiled with 10 cc of potassium hydroxide T. S., a reddish-brown precipitate will be produced; and if to the filtrate from the latter, slightly acidulated with hydrochloric acid, magnesia mixture T. S. be added, and subsequently an excess of ammonia water, no crystalline precipitate should be produced (absence of *phosphate*).

11. If 1 gm. of the salt be dissolved in about 25 cc. of boiling water by the aid of sufficient hydrochloric acid, added drop by drop, 0.2 cc. nitric acid added and the solution boiled and then a slight excess of ammonia water added, the filtrate from the precipitate should be colorless, and, after acidulating with hydrochloric acid, should not respond to the Time-Limit Test for *heavy metals.*

12. To 1 gm. of the salt add 10 cc. of nitrohydrochloric acid and evaporate to dryness. Dissolve the residue in 25 cc. of distilled water and 15 cc. of hydrochloric acid. Transfer it to a glass-stoppered container. Add 4 gms. potassium iodide and keep at 40° C for 30 minutes. Cool and titrate with N/10 sodium thiosulphate, V. S., using starch T. S. as indicator. It should show not less than 22% of Iron. Each cc. of N/10 sodium thiosulphate, V. S., used corresponds to 0.005584 gms. of Iron (Fe) and 0.025089 gm. Ferric Hypophosphite $Fe(PH_2O_2)_3$.

13. *Average dose.*—0.200 gm.=200 milligrammes (3 grains).



Looking across the Lagoon at the Palace of Fine Arts
Panama-Pacific International Exposition

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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REPRINTS.

If the request is made at the time copy is submitted, authors will be furnished reprints by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

100 copies, 4 pages, no cover, $2.50, with cover, $4.50.

200 copies, 4 pages, no cover, $3.00, with cover, $5.50.

50 copies, 8 pages, no cover, $2.75, with cover, $4.50.

100 copies, 8 pages, no cover, $3.50, with cover, $5.00.

200 copies, 8 pages, no cover, $4.50, with cover, $6.50.

50 copies, 12 or 16 pages, no cover, $4.00, with cover, $5.50.

100 copies, 12 or 16 pages, no cover, $5.00, with cover, $6.50.

200 copies, 12 or 16 pages, no cover, $6.50, with cover, $8.00.

Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

PAPERS FOR THE ISSUES OF JULY, AUGUST AND SEPTEMBER.

As the papers that were read at the Detroit meeting of the American Pharmaceutical Association have nearly all been printed, the editor requests that contributions for the succeeding numbers of the Journal be submitted. It is not desired to interfere with the work of the Sections and doubtless papers read at the Branch meetings will contribute largely to our present needs.

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PHARMACY IN THE ASCENDANT AT NEBRASKA.

It is not often that the honor to deliver a University convocation address comes to a pharmacist, but the University of Nebraska conferred upon me this honor recently by inviting me to deliver the address of the day at the University convocation on Thursday, May 13. The week, May 10 to 15 inclusive, was designated by the University as "Pharmacy Week" in recognition of the promotion of the department of pharmacy into the estate of a full college. Formerly it was a school. Not only has the department been elevated in rank, but it has been given the positive assurance that it may soon vacate its all too inadequate quarters and remove into a building entirely its own. The building assigned to pharmacy is the present chemistry building, in which something over six hundred students are taught chemistry. The building is to be remodeled and adapted to the purposes of a college of pharmacy. Dean Lyman especially is very happy about this because it has been his constant endeavor since the school was first established in 1908 to secure for pharmacy a more equitable place among the University colleges. As valuable as the assigned new building, is the good will toward pharmacy on part of the University Chancellor and the Regents, who have promised their support toward the development of pharmaceutical education on a University basis in Nebraska. To this good fortune is added that growing out of the constructive activity of the Nebraska State Pharmaceutical Association through the work of whose president, who is also State Senator, Senator Brookley, the recently adjourned legislature enacted the law elevating the school of pharmacy into a college of pharmacy. This elevation places pharmaceutical education in Nebraska on a basis comparable with the ranks enjoyed by

other educational departments. This is only another evidence of the upward tendency of pharmaceutical education throughout the country. Not only are the colleges developing, but the state associations are taking more lively interest in adequate educational standards. The state boards, too, are stimulating the upward movement. The President of the Nebraska State Board of Pharmacy introduced a resolution at the Board meeting, held while I was at Lincoln, to make two years of high-school work the minimum academic requirement for eligibility to state examination.

It is some little satisfaction to Minnesota to know that Nebraska has been following the pharmaceutical educational development that has been going on in Minnesota and that it has found it worthy of emulation. Minnesota is especially pleased that Nebraska has now also fallen in line in the matter of recognizing medicinal plant cultivation as a legitimate and necessary activity of a college of pharmacy in its provision of adequate teaching facilities. Nebraska has a very respectable nucleus of a drug garden and is in a fair way soon to inherit room in some of the University plant houses for such work as can only be done in a greenhouse.

FREDERICK J. WULLING.

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DR. JOHN B. BOND, SR., RESIGNS FROM ARKANSAS BOARD OF PHARMACY.

After twenty years, faithful and efficient service, Dr. John B. Bond resigned from the Arkansas Board of Pharmacy, when that body met in Little Rock, May 10. No one in Arkansas has devoted more time nor accomplished more for pharmacy in this state than Dr. Bond, and he retires with the honors of faithful service. The action on his part was by the speedometer of time which indicated that rest was not only deserved but mandatory.

S. V. Bracy, of Little Rock, was unanimously elected to succeed Dr. Bond.

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GLYCERIN AND ACETIC ACID MENSTRUA.

In view of the fact that the tax on alcohol has been advanced in England, glycerin and acetic acid are again suggested as menstrua for preparations of drugs. William Wolstenholme suggests a mixture of glycerin, 10 parts; acetic acid, 1 part; water to make 40 parts for menstruum. He gives the name of "Glyncture" to the preparation. Fluidglycerates are also referred to. In this connection it might be stated that the price of glycerin will likely advance considerably, but in any event will be much cheaper than alcohol.

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POTASSIUM SALTS IN JAPAN.

Professor Numura of the Tokio Imperial University states that sugar-cane waste, sawdust and timber will furnish an annual supply of 30,000 tons of potassium salts. Morphine and salicylic acid are now being manufactured in Japan.

The Bulletin Board

THE SAN FRANCISCO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The local committee of the American Pharmaceutical Association, through the co-operation of the Exposition Tour Service Company of San Francisco, have secured the Bellevue Hotel located at Geary and Taylor streets, San Francisco, as the headquarters of the American Pharmaceutical Association. This is one of the very best hotels in the city, of equal grade with the Palace and the St. Francis. The hotel is in a quiet place, yet within three blocks of the very heart of the business section of San Francisco and within from one to three blocks of the hotel center. The Geary street car passing the main entrance of the hotel, runs direct to the main entrance of the Panama-Pacific International Exposition grounds.

Through the Exposition Tour Service Company, a special rate has been secured for the members, families and friends of the American Pharmaceutical Association, which covers the following service:

Room with private bath at either the Bellevue or one of the first-class hotels in the immediate vicinity of the Bellevue Hotel, to be occupied by two persons, from August 9 to August 14, inclusive.

Transportation by auto or taxi for each person, on arrival, from the depot to the hotel, and a like service on departure.

Transfer of baggage to and from the hotel.

Six tickets of admission to the Exposition

grounds to each person, such tickets good for admission any time on or before December 1, 1915, and may be used by any person. Those not used will be redeemed.

For the individual service above mentioned, a special price of $25 is made for each adult person, payable as follows:

Ten dollars on making the reservation and the remainder, $15, to the committee after arrival.

An attempt will be made to secure special rates for those who may desire to remain for a longer period. It will manifestly be desirable to know at the time of making the reservation whether or not it is desired to stay longer than the period of the convention.

Application for reservation may be made either to the Exposition Tour Service Company, 155 Sutter street, San Francisco, or to Albert Schneider, Local Secretary, 723 Pacific Building, San Francisco. The early applicants will be located in the Bellevue Hotel.

The above is the individual service to each member of the American Pharmaceutical Association. Taking into consideration the high grade hotel accommodations provided and the crowded condition of the city of San Francisco at this time, the above rates are remarkably low.

The details of the entertainment which will be provided for the members of the American Pharmaceutical Association and the other allied pharmaceutical associations will be announced later. The entertainment will include a trolley ride, boat trip on the Bay of San Francisco, visit to the Exposition concessions, grand ball and reception, theatre party, etc.

LOCAL COMMITTEE OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

(Signed) ALBERT SCHNEIDER,
Local Secretary.

HOTELS.

The Bellevue has been selected headquarters of the Association, rates and accommodations are named in the report of Local Secretary Dr. Albert Schneider. For the convenience of members we append a list of hotels that may be corresponded with in advance of the meeting. The rates given will only serve as a guide, as far as our information goes the price named is for room with bath, one person. Rooms without bath would be lower and the usual advance for more persons in a room:

NEAR CENTER OF BUSINESS SECTION.

Palace, Market and New Montgomery.	$3.00
St. Francis, Powell and Geary.....	3.00
Fairmont, Mason and California.....	4.00
Also American plan.	
Bellevue, Geary and Taylor.....	4.00
Also American plan—add $2 a person.	
Chancellor, Powell and Post.....	2.50
Also American plan.	
Cartwright, Sutter and Powell.....	2.00
Clift, Geary and Taylor.....	2.50
Also American plan—add $2.50 a person.	
Manx, Powell and O'Farrell.....	2.00
Plaza, Post and Stockton.....	2.00
Also American plan—add $2 a person.	
Stewart, Geary and Powell.....	2.50
Also American plan—add $2 a person.	
Dale, 34 Turk.....	3.00
Ramona, 174 Ellis.....	2.00
Argonaut, Fourth and Market.....	3.00
Clark, Eddy and Taylor.....	2.50
Glenn, Turk and Market.....	2.50
Grand, 57 Taylor.....	2.50
Knickerbocker, 589 Post.....	
Leesmont, California and Stockton....	2.50
Martinique, 737 Bush.....	2.50
Montclair, 995 Pine.....	2.50
Regent, 562 Sutter.....	2.50
Also American plan—add $1.50 a person.	
St. Dominic, Bush and Jones.....	2.50
Worth, 641 Post.....	2.50
Zenobia, 947 Bush.....	2.50
Adena, 144 O'Farrell.....	2.00
Alhambra, 860 Geary.....	2.00
Baldwin, Grant and Sutter.....	2.00
Brayton, 50 Turk.....	2.00
Carson, 972 Market.....	2.00
Claridge, 749 Taylor.....	2.00
Cornell, 715 Bush.....	2.00
Cort, 34 Ellis.....	2.00
Court, Bush and Stockton.....	2.00
Also American plan—add $2 a person.	
Eureka, 438 O'Farrell.....	2.00
Garfield, 354 O'Farrell.....	2.00
Also American plan.	
Garland, O'Farrell and Jones.....	2.00
Golden West, Powell and Ellis.....	2.00
Goodfriend, Powell and Geary.....	2.00
Graystone, 66 Geary.....	
Hacienda, 580 O'Farrell.....	2.00
Herald, Eddy and Jones.....	2.00
Kensington, Geary and Jones.....	2.00
Keystone, Fourth and Market.....	2.00
Lankershim, Fifth near Market.....	2.00
Maxwell, 625 Taylor.....	2.00
Mentone, Ellis at Jones.....	2.00
Schwartz, 62 Turk near Market.....	2.00
Also American plan.	
Stanford, Bush and Kearny.....	2.00
Strand, 415 O'Farrell.....	2.00
Sussex, 701 Sutter	2.00
St. Andrew, 440 Post.....	2.00
Thoma, Stockton and Post.....	2.00
Towanda, 556 Jones.....	2.00
Turpin, 17 Powell at Market.....	2.00
Victoria, Bush and Stockton.....	
Also American plan.	
Von Dorn, 242 Turk.....	2.00

Windemere, 776 Bush	2.00
Yuba, 1146 Mission	2.00
Adaire, Ellis near Jones	1.50
Adrain, 493 Eddy near Hyde	1.50
Alta, 165 Third	1.50
Arlington, Ellis and Leavenworth	1.50
Also American plan—add $1.50 a person.	
Athmore, 450 Jones	1.50
Avon, 420 Jones, corner Ellis	1.00
Beresford, Mason and Sutter	1.50
Berg, 221 Mason	1.50
Dumas, O'Farrell at Taylor	1.50
Grant, Bush and Powell	1.50
Also American plan—add $1.25 a person.	
Hamlin, 338 Eddy	1.50
Hansa, 447 Bush	1.50
King George, Mason at Geary	1.50
Irwin, Fourth and Mission	
Madison, 364 O'Farrell	1.50
Marymount, Jones and O'Farrell	1.50
Minster, Mason and O'Farrell	1.50
Rand, 364 Eddy	1.50
Ritz, 216 Eddy	1.50
Sequoia, Jones and O'Farrell	1.50
Senate, 471 Turk	1.50
Shasta, 314 Kearny	1.50
St. Cecile, 115 Fell, near Van Ness	2.00
Tallac, 140 Ellis	1.50
Thomas, 969 Mission	1.50
Windsor, 238 Eddy	1.50

For rates and routes the readers are referred to the report of the Committee on Transportation in the March number, page 411.

ENTERTAINMENTS.

The *Allied Drug Interests* of California, organized for the purpose of entertaining the druggists of the world during 1915, have headquarters in the Claus Spreckles Building at Third and Market Streets. D. R. Rees, Chairman of the Publicity Committee, sends the following tentative program of entertainments just to serve as a guide for the fun and frolic in store for all who attend:

Monday, August 9, 1915.

Reception and Dansant at Bellevue Hotel.

Tuesday, August 10, 1915.

Evening Fior D'Italia Dinner

Wednesday, August 11, 1915.

Afternoon—

Ball at California Building.

Evening— P. P. I. E.

Thursday, August 12, 1915.

Afternoon—Card Party for Ladies.

Friday, August 13, 1915.

Morning—10 A. M. Trolley Trip.

1 P. M. Luncheon—Old Faith Inn—

P. P. I. E.

Afternoon—2:30 to 3:30—

Organ Recital at Festival Hall, P. P. I. E.

SIXTY-THIRD ANNUAL CONVENTION AMERICAN PHARMACEUTICAL ASSOCIATION,

To be Held in San Francisco, Cal., August 9-14, 1915.

Final announcement of Committee on Transportation:

On account of the very low excursion rates to the Pacific Slope and the attractions of the Panama-Pacific International Exhibition at San Francisco and the Panama-California Exhibition at San Diego, the rush travel this season to coast points will be greater than ever before, and for the convenience of our members and to secure their comfort, your Committee has arranged with the Chicago, Burlington & Quincy Railroad to run a special train from Chicago to San Francisco to be known as the "American Pharmaceutical Association Special," on which *no extra fare will be charged.*

Price of ticket good for three months, with stop-over privileges west of Chicago to go and return by any direct route:

From Boston, via N. Y. C. lines, $104.20; other lines, $101.20.

From New York, via N. Y. C. lines or Pa. lines, $98.80; other lines, $94.30.

From Philadelphia, $95.20.

From Baltimore and Washington, $92.95.

From Chicago, $62.50.

From Cincinnati, $70.25.

From St. Louis, $57.50.

From Atlanta, $72.55.

From Savannah, $80.50.

From Jacksonville, $80.50.

From New Orleans, $57.50.

From St. Paul, $63.83.

From Denver, $45.

From all other points at proportionate rates.

To return via Portland an extra charge is made of about $17.50 on each ticket, the exact amount of which can be ascertained from the ticket agent in your city.

Purchase your excursion tickets from your *regular ticket agent*, choosing your own route *to* Chicago, but seeing that beyond that point the route is C. B. & Q. to Denver; Denver & Rio Grande to Salt Lake; Western Pacific to San Francisco.

Route from the Special train will be as follows: C. B. & Q. to Denver, D. & R. G. to Salt Lake City, Western Pacific to San Fran-

cisco, and train will run on the following schedule:

Leave Chicago, Thursday, July 29th, at 11 P. M.

Arrive Denver, Saturday, July 31st, at 7:20 A. M.

Leave Denver, Saturday, July 31st, at 7:45 P. M.

Arrive Colorado Springs, Saturday, July 31st, at 10:28 P. M.

Leave Colorado Springs, Sunday, August 1st, at 10:35 A. M.

Arrive Salt Lake City, Monday, August 2d, at 1:30 P. M.

Leave Salt Lake City, Tuesday, August 3d, at 12:45 P. M.

Arrive San Francisco, Wednesday, August 4th, at 5:45 P. M.

The above provides for a 12-hour stop at Denver during which the local branch of the A. Ph. A. will entertain the party and there will be sight-seeing trips through city and suburbs.

At Colorado Springs the train will be parked for the night and those who rise reasonably early will be able to visit Manitou by trolley and take the carriage ride through the Garden of the Gods (arrangements for this will be made by F. W. Nitardy, Denver member of Committee on Transportation), before the train starts at 10:35 A. M. on its trip through the famous Royal Gorge, via the scenic D. & R. G. R. R. to Salt Lake, where in the afternoon of August 3d there will be a trip (personally conducted by local members of the A. Ph. A.) to the Mormon Temple and points of interest in the city. The train will be parked here for the night and in the morning party will visit the bathing place and amusement park on Salt Lake before boarding the train at 11:45 A. M. for San Francisco. From Salt Lake train is to be run over the Western Pacific through the famous Feather River Canyon to San Francisco.

A pamphlet in relation to above is in preparation and will be mailed to members of the Association.

Members traveling by above train will reach San Francisco in time to attend the sessions of the National Association of Boards of Pharmacy and the Conference of Pharmaceutical Faculties which are to be held on August 5th, 6th and 7th, while those who do not desire to attend these meetings will have these three days and Sunday in which to visit the Panama-Pacific Exhibition or points of interest in San Francisco before the first session of the A. Ph. A. meeting which will be held on Monday, August 9th.

Members upon arrival should immediately register at headquarters, the Bellevue Hotel, where a special rate has been made of $25 for six days for each room with private bath and six exposition admissions. For members who desire cheaper accommodations, rooms can be secured for $1.00 per day upwards, $1.50 per day with bath upwards, by addressing in advance of the meeting the local Secretary, Dr. Albert Schneider, 723 Pacific Building, San Francisco.

Regular Pullman rates will be charged on the A. Ph. A. special, but you must order reservations from W. Bodemann, Hyde Park, Chicago, Ill., the Chicago member of Transportation Committee, which should be ordered *at once* specifying whether upper or lower berth or drawing room is required.

Members must also choose their return routes when buying tickets, see suggestions that follow. The first three are northern routes, via Portland, for which the extra fare is charged.

Suggested routes to return from San Francisco:

Northern Route No. 1—Great Northern Pacific S. S. (no extra charge for berth and meals), or Southern Pacific R. R. to Portland; Great Northern R. R. to St. Paul (side trips through Glacier, National Park, from 1 day, $8.25, to 7 days, $47.50).

Northern Route No. 2—as above to Portland; Northern Pacific to St. Paul, via Livingston (original route Yellowstone National Park, six days, including transportation, hotels and meals, $53.50), C. B. & Q to Chicago, Omaha, St. Louis, Kansas City.

Northern Route No. 3—as above to Portland; Great Northern, or Northern Pacific to Seattle, boat to Victoria or Vancouver, Canadian Pacific, via Glacier, Field (for Emerald Lake and Yoho Valley), Laggan (for Lake Louise), Banff to St. Paul (via Winnipeg if desired), C. B. & Q. to Chicago, Omaha, St. Louis, Kansas City.

DIRECT ROUTES; NO EXTRA FARE.

No. 4—San Francisco to Los Angeles by Southern Pacific or A. T. & S. F. (side trip to Yosemite and Big Trees at special rate to be named in San Francisco), side trip Los Angeles to San Diego for Panama California

Exhibition by A. T. & S. F. R. R. at no extra charge if included in ticket at time of purchase. Salt Lake (side trip through Yellowstone, six days, $53.50, including transportation, hotels and meals), Salt Lake to Denver, D. & R. G., thence by C. B. & Q. to Omaha, Chicago, Kansas City, and St. Louis.

Direct Route No. 5—Same as above to Los Angeles, thence by Southern Pacific R. R. to New Orleans.

Direct Route No. 6—Same as No. 4 to Los Angeles, thence via A. T. & S. F. to Kansas City via Williams (side trip to Grand Canyon, round trip, $7.50), Adamana (for Petrified Forest; livery, $3 each for two persons, $2.50 each for three or more), C. B. & Q, Kansas City, Omaha, St. Louis, Chicago.

By ordering your Pullman reservations as soon as possible from Mr. Wilhelm Bodemann, Hyde Park, Chicago, Ill., you will secure better accommodations and lighten the labors of your Committee.

Respectfully submitted,
For the Committee on Transportation,
THOS. F. MAIN, Chairman.

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SECTION ON COMMERCIAL INTERESTS

The Commercial Section is desirous of papers on the following list of subjects:

1—Meeting mail order competition. A plan outlined.
2—A system of stock arrangement as a help to reduce store expense.
3—Developing the sale of rubber sundries—photographic supplies — stationery—cigars.
4—Possibility of creating a National line of non-secrets, to be prepared by the individual but with common ownership of copyrighted labels.
5—Co-operation in purchases by druggists of a locality. Does it pay?
6—Misrepresentation in merchandising.
7—Advertising the prescription department
8—Is it advisable to give clerks a percentage of sales.
9—Your own non-secrets, compared with other lines.
10—Window displays that produce results
11—Teaching salesmanship to clerks.
12—Store fixtures as a help in developing business. What necessary or of advantage.
13—Perfumes—Manufacture of—Basic Material—Care—Selling Pointers.
14—Purchases — What — When — Where—Quantity limits.
15—Store management — Prevention of waste—Goods out of stock, etc., etc.

E. H. THIESING, Chairman,
Gilbert and Lincoln Ave., Cincinnati, O.

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THE HISTORICAL SECTION.

The Historical Section is desirous of papers concerned with early pharmacy in all States. Biographical sketches of pharmacists, letters and other literature, views of old pharmacies and contributions of pharmaceutical interest are solicited. Reports on native drug plants, used in the earlier days, and descriptive methods for making preparations of them, are also asked for.

FREDERICK T. GORDON, Chairman,
2115 Medary Ave., Philadelphia.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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BALTIMORE.

The May meeting Baltimore Branch, American Pharmaceutical Association, was held in the Assembly Hall of Hynson, Westcott & Company's Pharmacy, S. E. corner Charles and Franklin Streets, Wednesday, May 19, at 8 p. m., with President E. W. Hodson in the chair.

The regular program was:

THE JOURNALS

Six of the journals have been assigned to as many different members, and we are to have presented, for our information and dis-

cussion, one or more articles from each. Dig out something interesting from your journal, bring it along and discuss it with us.

A Mystery by the Misses, or Pharmacisters' Promised Pabulum and Palaver.

This is to be the last meeting till autumn, and the pharmacisters are going to make good a partial promise "maiden" January.

On motion of Mr. Muhlhause, the Secretary was directed to send a letter to Mr. John S. Donnett, expressing the sympathy and extending the condolence of the Branch to him in his recent bereavement in the death of his wife.

Only four of the journals were reported on and one of the should-have-been reporters sent in his regrets as to his unavoidable absence and, therefore, became a was-not-reporter, while in the other case, the most important item in that particular journal was pointed out as uninteresting and unentertaining to a gathering in which so many diversified interests were represented.

Miss Sonnenberg read extracts from an editorial commending the Branch's resolution on bettering the Latin of prescriptions and incidentally it was brought out, that the generally accepted pronunciation of a good many medical, chemical and pharmaceutical terms is incorrect and, in speaking, correct pronunciation is not only necessary but also imperative and consultation of a good, modern dictionary is advisable for new words and even for a number of old ones.

"Ouabain" was cited as not being pronounced ou (rhyming with the "moo" of moo cows), but as "wa" (rhyming with jaw) bain.

"Enzyme," not as en-zyme (rhyming with dime), but as en-zim (rhyming with Jim).

The ruling as to allowing physicians to order a repeat of a narcotic prescription by giving an order for its refilling by simply writing the full number of the original on a blank along with the requirements as to registry number, date, name of patient, physician's name, etc., as required for the original, was considered as simplifying things.

Mr. Morgan called attention to an editorial about incorrect weights, and during its discussion, the practice of the average pharmacist to rely indefinitely on the accuracy of the weight, measure and thermometer makers' instruments, was condemned and, inasmuch as the Government Bureau of Standards will examine them for a nominal sum, it was resolved, that, "It is the sense of the Branch that more attention be paid to the accuracy of weights, measures and thermometers and that pharmacists should have them examined at least once by the Bureau of Standards and that they ought to have the weights and thermometers examined occasionally thereafter."

In this connection, it was brought out that supposedly accurate prescription scales are often inaccurate for small quantities and attention should be paid to the quality and condition of them.

A case was cited and corroborated in which it was stated that some years ago, it was not possible, from all the one-ounce graduates in stock at a local jobber's, to get a single one to graduate correctly from three drachms down.

In discussing, with Mr. Meyer, an article on making Syrup Hypophosphites and Syrup Hypophosphites Compound, by using only one hypophosphite, namely, calcium, and sulphates of the other metals, the alkaloids themselves and just enough sulphuric acid, to liberate sufficient hypophosphorous acid to dissolve the alkaloids and leave a necessary excess to insure a stable solution, the precipitated calcium sulphate being filtered out, suggested the possibility of using the same idea in making Elixir of the Glycerophosphates, of course, using calcium glycerophosphate as the source of the glycerophosphoric acid.

It was brought out that it would not be necessary to use scale soluble ferric phosphate if it was wanted for making Elixir Iron, Quinine and Strychnine Phosphates in large quantities.

The correct quantity of solution of ferric citrate could be made or used, and to it the exact amount of sodium phosphate should be added; this solution could be used without the necessity of scaling if the elixir is made from the oils, alcohol, water and syrup.

Mr. Hynson presented several articles from his journal and from a discussion of one of them, it was shown that the one-store pharmacist could compete with the chain stores by buying in quantities sufficient to give him a quick turn-over, thus tying up a minimum amount of money and yielding a greater profit on his capital than by stocking large lots at a greater discount, but at a slower turn-over and actually with less yearly profits on the total investment. Nothing was said as to the chain stores doing the same thing.

The pharmacisters then assisted the phar-

macists to sit in social session while they served salad and so forth, and the Misses' Mysterious "Pharmacisters Promised Pabulum Palaver" panned out particularly propitious.

The words "panned out" are used because they suggest nuggets, and the luncheon which was served by them was a veritable nugget as was suggested by the remark made by the son of Ham who delivered the coffee and said, "You all had better 'nu get busy."

Just before parting till the October meeting, a motion that "This elaborate spread be spread on the minutes and that the thanks of the Branch be extended to the pharmacisters" was O. K'd by the pharmacists singing or near singing, "So say we all of us."

WM. J. LOWRY, JR., Secretary.

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CHICAGO.

The Chicago Branch of the American Pharmaceutical Association met Tuesday evening, May 18, for the last monthly meeting of this season.

The meeting was called to order by President Craig. The question of delegates to the House of Delegates for the San Francisco meeting came up and the President was instructed to appoint three members as delegates preferably from among those who were reasonably sure of being at the meeting, and who had not been appointed from some other organization entitled to send delegates. The President deferred the announcement of the appointments until later. Our delegation was instructed, however, to offer the following resolution in the House of Delegates:

Resolved, That the question of the deletion of Squibb's and Sun Cholera Mixtures from the N. F. should be reconsidered by the N. F. Committee and that they should be reinstated into the text of the N. F.

The deferred election of a Branch Representative to the Council to fill the vacancy caused by the expiration of the term of Professor A. H. Clark was called for. Professor C. M. Snow was placed in nomination by Professor Day, the nomination being seconded by Mr. Orr. It was then moved, seconded and carried that nominations be closed. Mr. Snow was declared elected to serve as Council member for the Branch for three years from 1914.

Professor W. B. Day responded for the Legislative Committee and reported that the prospect for the final enactment of the State anti-narcotic law was very good, but that the passage of the anti-vending law was not so promising and of the pre-requisite law even less so.

Mr. William Gray, on behalf of the Committee on Practical Pharmacy, read a paper entitled, "Redistilled Water versus Sterilized Distilled Water." He made an especial plea that pharmacists generally should respect the wishes and orders of physicians and when the call came for redistilled water to be prepared to furnish the same and not substitute sterilized distilled water. His paper was well received and discussed and was ordered sent along with a drawing of the apparatus to the editor of the Journal for publication upon approval by the publication committee.

E. N. GATHERCOAL, Secretary.

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CINCINNATI.

The annual meeting of the Cincinnati Branch, A. Ph. A., was held at Lloyd Library, May 11, 1915.

The meeting was well attended, the President's annual address, the Secretary's annual report, the Treasurer's annual report, and particularly the annual reports of the various committees proving instructive and pleasing features.

The election of officers resulted as follows: President, Charles G. Merrell; First Vice-President, J. F. Kutchbauch; Second Vice-President, Louis Werner; Treasurer, Julius Greyer; Secretary, Charles A. Apmeyer; Member Executive Committee, E. H. Thiesing.

The installation of the newly-elected officers followed, each one pledging himself to further the interest to the best of his ability, not only for the local Branch, but also for the parent body.

The membership list of the Cincinnati Branch shows fifty members of record.

CHAS. A. APMEYER, Secretary.

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CITY OF WASHINGTON.

The April meeting of the City of Washington Branch of the American Pharmaceutical Association was held at the National College of Pharmacy, Wednesday, May 28, 1915.

The subject presented for discussion was the "Quality of Some Drugs Examined in the District of Columbia," by Dr. L. F. Kebler, Chief of the Drug Laboratory, U. S. Department of Agriculture.

Owing to the absence of Dr. Kebler, he having been called from the city, the subject was presented by Messrs. Murray, Palkin and Dr. Emery, of the Bureau of Chemistry.

The various products considered were Spirit of Nitrous Ether; Aromatic Spirit of Ammonia; Tincture of Iodine, and several Camphor Preparations (Tincture, Liniment and Soap Liniment), and numerous prescriptions which will be given below in detail.

Much interesting data was presented, and while the results in some cases showed that the preparations were below the standard, several were above. Careless manipulation, careless weighing or measuring of material or the use of inaccurate weights and measures are evident and go to show that the system usually followed in compounding prescriptions and manufacturing preparations by the average retail pharmacist is badly in need of readjustment.

SPIRIT OF NITROUS ETHER.

The samples taken of this product showed from slightly above the standard to as low as ½ of 1% Ethyl Nitrite. In not a single case was it shown that the product was assayed after being manufactured.

The Bureau has conducted many experiments to determine the keeping qualities of this product, and also as to what causes the decomposition, from the results already obtained, the work not yet having been completed, it is very clearly demonstrated that a properly made sample, using official alcohol, will keep for at least six months under the average store conditions. The greatest disturbing element in the decomposition of this product is water, causing hydrolysis to take place, resulting in decomposition in a very short while. The product if kept in small amber containers in a cool place with a trace of potassium bicarbonate present to neutralize any acid if formed, will keep for at least six months.

SPIRIT OF CAMPHOR.

The poorest samples of this product showed respectively —80%, —70%, —60%, —57%, —20%, —18% in camphor content, one specimen contained but 33% alcohol; with this product competition could be readily met and yet show a profit.

LINIMENT OF CAMPHOR.

One specimen examined was short in camphor content 90% and numerous showed —65%, —34%, —31%. The specimen 90% deficient was due to attempting to hurry the solution of camphor by use of a water bath, the container fractured, and the oil was then skimmed from the surface was the excuse offered at the hearing.

LIME WATER.

Many samples were taken, much interesting data was given tending to show that the necessary precautions with reference to manufacture and keeping of the product were ignored or neglected, one specimen was deficient in calcium hydroxide 99%, several were deficient —70%, —40%, —30%.

TINCTURE OF IODINE.

One specimen was 68% short in potassium iodide content, several contained but a trace, and others contained none; shortages of Iodine of —20% and —18% were common. At the hearing, one druggist admitted that his tincture of iodine was made by dissolving the contents of a one ounce bottle of iodine, without weighing same, in one pint of commercial alcohol, and that he used no potassium iodide. There was one specimen that contained —7% potassium iodide.

SPIRIT OF AMMONIA AROMATIC.

Considerable variation in both water of ammonia and ammonium carbonate content was found, clearly indicating the use of efflorescent ammonium carbonate and a deficiency in strength of the ammonia water that was used, not a single one showed that they had assayed the product after making. One specimen contained nearly three times the amount of ammonia gas required, clearly indicating the use of stronger water of ammonia instead of water of ammonia.

The following prescriptions were summarized, and while the data given shows some variations, as a whole they were better than previously shown with reference to compressed tablets on the market:

No. 1—16 Samples.

Antipyrine 2 grains
Sodium Salicylate 5 grains
Make 10 such capsules.

Variation, from 1.28 to 2.17 grains, or — 36% to + 8% in antipyrine and 4.49 to 6.22 grains, or — 10% to + 20% in sodium salicylate.

No. 2—18 Samples.

Antipyrine 2 grains
Sodium bicarbonate 10 grains
Make 10 such powders.

Variation, from 1.9 to 2.7 grains, or — 5% to + 35% in antipyrine and 4.9 to 10.2 grains, or — 50% in sodium bicarbonate.

No. 3—20 Samples.

Phenacetine	5 grains
Salol	5 grains

Make 10 such capsules.

Variation, from 4.2 grains to 5.46 grains, or — 16% to + 11% in phenacetine and 3.81 to 5.25 grains, or — 24% to + 5% in salol.

No. 4—20 Samples.

Salol	3 grains
Quinine sulphate	3 grains

Make 10 such capsules.

Variation, from 2.17 grains to 3.44 grains, or — 27% to + 15% in salol and 1.79 to 3.56 grains, or — 40% to + 18% in quinine sulphate.

No. 5—55 Samples.

Acetphenetidin	3 grains
Bismuth subnitrate	3 grains
Sodium bicarbonate	10 grains

Make 10 such powders.

Variation, from 1.5 grains to 3.8 grains in acetphenetidin, or —50% to + 27%.

Prescription No. 1 showed two substitutions of acetanilide for antipyrine; under no conditions was this excusable. No. 5 likewise showed two substitutions of acetanilide for acetphenetidin and one for bismuth subnitrate, subcarbonate being used. If the prescription had called for a liquid in connection with the combination the pharmacist would have been justified in using bismuth subcarbonate.

In summing up and considering the excuses offered for the many shortcomings, many were cited that were given at the hearings. All of them tended to show the lack of proper checking system for both weights and measurers and also methods in compounding and manufacturing. The lack of good judgment in many cases likewise was demonstrated, as for example, the cleaning of weights with sand soap and hydrochloric acid; the weighing of material on paper without previously counterpoising the paper; the use of weights for years without testing same as to accuracy, or the replacing with new ones. These conditions no doubt account for the inaccuracies in compounding.

Much discussion followed, numerous questions were asked and answered by the gentlemen from the Bureau of Chemistry which developed a general feeling that much good would be accomplished from the presentation of the true conditions, as found by careful investigation.

S. L. HILTON,
Secretary.

NASHVILLE.

The Nashville Branch, A. Ph. A., held its regular meeting at Bloomstein's Hall, April 14, with President E. F. Trolinger in the chair. Following the approval of the minutes a communication was read from Professor H. P. Hynson in regard to abolishing the House of Delegates. A free discussion of this followed. The consensus of opinion was that the House of Delegates being a new organization should be tried out thoroughly before abolishing it. The idea of bringing the State Associations in closer touch with the American Pharmaceutical Association was favored.

The passage by the State Legislature of a stringent law regulating the sale of alcoholic liquors by druggists was announced. The bill provides that the amount kept on hand at no time can exceed one percent of the value of the stock; that it can be dispensed only on the written prescription of a licensed physician who has visited the patient at his domicile, and that both druggist and physician must preserve records of the prescription for two years. The enforcement of the law is made the duty of the State Food and Drug Inspector. Recent rulings on the Harrison Law were read and discussed.

Dr. J. O. Burge read abstracts referring to flavorings for cod-liver oil, para dichlor benzine, the new insecticide, and on a new test for cancer. W. R. White called attention to the recent discovery by Dr. Rittman of a new process for obtaining toluol and benzole from petroleum oil and its possible bearing on the dye industry of this country; to the discovery of a new alkaloid called struxine from nux vomica by Hugo H. Schaefer, and to the use of scopolamine hydrobromide and morphine in producing a semi-conscious effect on labor patients, called Twilight Sleep. Dr. Ruddiman seriously questioned its advantages over the usual methods of treatment.

W. R. WHITE, Secretary.

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NEW YORK.

Minutes of the regular meeting of the New York Branch of the American Pharmaceutical Association, held in the New York College of Pharmacy Building, April 12, 1915, President Roemer in the Chair.

Upon motion, reading of the minutes of preceding meeting was dispensed with.

Treasurer's report received with thanks.

Mr. McElhenie, member of the Council being absent, no report was received.

Reports of Standing Committees:

Membership—Absent.

Legislation and Education—Absent.

Fraternal Relations—Chairman Berger reported progress.

Progress of Pharmacy—Professor Diekman read a very interesting report covering the following subjects: Adigan, a new digitalis preparation; Grotan, a powerful disinfectant; the use of magnesium sulphate in tetanus; the use of hydrazin and dioxim in a delicate test for iron; Histamin obtained from ergot, its uses and properties; a method for the determination of silver in colloidal preparations; a method for the rapid determination of heavy mineral oil in vegetable oils or paints; purity and manufacture of acetyl-salicylate of calcium; the disturbing influence of alcohol and other fluids on certain reactions; a criticism of the aldehyde test in chloroform; Lavonat, a preparation used for infections of mucous surfaces; an abstract of a very interesting and exhaustive article on hair-dyes, as used past and present. Dr. Ditmar-Graz in Der Seidenfabricant, 1914, gives exhaustive directions for manufacture and application as well as condemnation of those containing lead or silver and some organic compounds.

Messrs. Lascoff, Diner, and Diekman then spoke relative to the decease of Thomas F. Raymow, and the President appointed Messrs. Diner, Raubenheimer and Hostmann a committee to draw up a suitable set of resolutions.

Mr. Thomas F. Main then addressed the members, explaining what arrangements were being made by the Committee on Transportation for the San Francisco Convention.

Communications from Secretary Day and Professor Remington were read.

Dr. Mayer suggested that a dinner be held to celebrate the closing of the season, and President Roemer appointed Messrs. Mayer, Mansfield and Hostmann as a committee to make arrangements therefor.

Dr. Leo Fried then read a paper on "Data and Method of Assay of Iodine Ointment." After discussion by Messrs. Diner, Weinstein, Mayer, Turner and Raubenheimer the same was received with thanks.

President Roemer then presented a paper entitled, "Phenomena of Drug Action." This paper called for a very spirited discussion, taken part in by many of the members present.

After extending a rising vote of thanks to the speakers the meeting adjourned.

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Minutes of the regular meeting of the New York Branch of the American Pharmaceutical Association, held in the New York College of Pharmacy Building, May 10, 1915, President Roemer in the Chair.

The minutes of the April meeting were adopted as read.

The Treasurer, Member of Council, and Chairmen of the Committees on Membership, Legislation and Education, Fraternal Relations were not present and no reports were received. President Roemer read a letter of regret from Dr. Diekman, Chairman of the Committee on Progress of Pharmacy, explaining his absence.

The committee on "Raymow Resolutions" presented their report, which was adopted, and the committee was discharged with thanks.

THOMAS F. RAYMOW.

WHEREAS, The members of the New York Branch of the American Pharmaceutical Association have learned with great regret of the death of Thomas F. Raymow, a fellow-member, on April 12, 1915.

Be it Resolved, That as an expression of the deep sense of personal loss felt by the members of this Branch, a page in the minutes be set aside for these resolutions, and,

Be it furthermore Resolved, That the members of the Branch hereby extend to his family their deepest condolences in this hour of great bereavement, and,

Be it furthermore Resolved, That the Secretary be directed to forward a copy of these resolutions to the family of our deceased member.

(Signed) JACOB DINER,
JEANNOT HOSTMANN,
OTTO RAUBENHEIMER,
Committee.

Chairman Mayer, for the Dinner Committee, in reporting suggested that the date of dinner be postponed to the fall and, upon motion, the committee was continued with directions to act upon said suggestion.

Dr. Robert A. Hatcher and his associate, Dr. Eggleston Cary, then reported upon their investigations regarding the stability of Infusion of Digitalis. They brought out the following facts: That alcohol is of no value and needless as a preservative agent; that if properly prepared and kept under ordinary conditions the loss in therapeutic activity up

to the end of a period of three weeks is practically negligible; to properly exhaust the leaf it should be in a No. 60 powder, and the infusion should be prepared by maceration for one hour on a bath of boiling water with subsequent filtration.

According to the speakers, the theory that different digitalis preparations possess different therapeutic properties has been finally and positively disproved. Gram for gram the infusion will exhibit exactly the same therapeutic results as the tincture or fluidextract.

A sample of digitalis leaves that had been macerated with an equal weight of water for four months, although completely covered with mould and having the characteristic earthy odor, when tested had only lost 50 per cent of its toxic properties.

Following an extended discussion, taken part in by many of the members, a rising vote of thanks was extended to the speakers, who undoubtedly will present a paper at a future date after completion of their investigation.

"Liquid Petrolatum, Russian and American," was the title of a very interesting paper presented by Mr. E. H. Gane, in which he pointed out, that American oils can now be secured that are equally as good as the Russian. Particular stress was laid by the speaker upon the importance of the viscosity rather than the gravity in determining their medicinal value. A line of important tests as well as tabulated results of a series of examinations carried out by Mr. Gane on twelve market samples are given.

The paper called for a spirited discussion, during which the tests as well as the value of various oils were gone over.

After thanking the speaker for his interesting paper nine new members were elected and the Secretary was ordered to send return postal cards to all members asking them to vote upon the desirability of holding semi-monthly meetings beginning with the October meeting.

JEANNOT HOFFMANN, Secretary.

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WEST VIRGINIA.

The West Virginia Branch of the American Pharmaceutical Association held a meeting at the Windsor Hotel, Wheeling, W. Va., on the evening of May 3, 1915, at 8 o'clock. This was the initial meeting of the Branch in Wheeling and was enthusiastically supported by the city pharmacists and those from nearby towns. The Wheeling Druggists' Association, the local organization, had the arrangements in charge and a general invitation was extended to both physicians and pharmacists, as well as to the young men who were presenting themselves before the State Board of Pharmacy for registration examination.

Professor W. A. Schultz, formerly of the U. S. Public Health Service and now head of the Department of Pharmacology of the West Virginia University, and Professor Charles H. Rogers, Dean of the School of Pharmacy, West Virginia University, gave a most interesting discussion on "Some Recent Developments in Physiological Assay." The various methods, both old and new, for assay of the members of the digitalis group, ergot and cannabis were demonstrated. Several samples collected from the trade were assayed and their comparative value determined with regard to preparations made from properly cultivated and collected drug. The discussion and particularly the demonstration of the actual work by specialists in this line of endeavor was a revelation to many present and inculcated a desire in the pharmacists to handle only standardized, dated preparations. Those of the medical profession present, enthusiastically supported such sentiments.

Dr. A. Arkin, Head of the Department of Bacteriology and Pathology of the School of Medicine, West Virginia University, also gave a most interesting discourse on "Biological Products and Their Properties." The understanding of these preparations by the average pharmacist has always been more or less hazy. Dr. Arkin presented the subject in such a manner as to be appreciated and understood by all present.

A number of local gentlemen were heard from, and the pharmacists of West Virginia were urged to appreciate the professional side of their calling and to make the most of it. A vote of thanks was tendered those taking part in the program. The meeting formally adjourned and was succeeded by a social gathering and smoker.

A. B. BERRY, Secretary.

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Courage is the thing which enables a man to tackle a hard task with ease. Nerve is the thing which enables him to tackle it when he's scared to death—Tips.

Colleges

LOUISVILLE COLLEGE OF PHARMACY.

The Commencement exercises of Louisville College of Pharmacy were held May 11.

The list of graduates follows: Edwin Forest Abbott, Eskdale, W. Va.; Jasper Jones Bailey, Hanson, Ky.; Theophilus P. Brown, Stanford, Ky.; Hugh T. Collins, Lawrenceburg, Ky.; Frank Bernard Dougherty, Jeffersonville, Ind.; Curtis B. Dozier, Thomasville, Ala.; Elias A. Dunbar, Jamestown, Ky.; Luther C. Ellis, Glasgow, Ky.; David U. Garber, Jellico, Tenn.; Ernest S. Julian, Cleveland, Tenn.; Jonathan B. Legg, Clifty, W. Va.; Wilbur R. Parks, Irvington, Ky.; William Orville Patterson, Hawesville, Ky.; Hart L. Perry, Richmond, Ky.; Frank W. Richey, Cannelton, Ind.; Robert W. Schroader, Murray, Ky.; William B. Schultz, Middlesboro, Ky.; Charles H. Tye, Barbourville, Ky.; Vernon Valentine, New Castle, Ky.; Clay Louis Vallandingham, Owenton, Ky.; John W. Wear, Murray, Ky.; Clarence H. Adams, Robert P. Brumleve, Carl J. Eilers, Samuel Levinstein, Harry L. Pfeiffer, Jack Posnansky, Arthur T. Schreiber, Joseph C. Seitz and Karl H. Strober, of Louisville.

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NEW YORK COLLEGE OF PHARMACY.

The George J. Seabury Scholarship has been established in New York College of Pharmacy, having been founded by Dr. Henry C. Lovis in memory and honor of his uncle, George J. Seabury. This scholarship entitles its holder to the fourth year of University study in the College and leads to the degree of Bachelor of Science in Pharmacy. It is therefore open only to the graduates of the three-year University Course, who hold the degree of Pharmaceutical Chemist.

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MASSACHUSETTS COLLEGE OF PHARMACY.

The Commencement exercises of Massachusetts College of Pharmacy were held May 20. The ceremonies were presided over by President C. Herbert Packard and the address to the graduates was deliveerd by A. A. Berle, D. D. The degree of Pharmaceutical Chemist was conferred on: Elmer William Bennett, Ph. G., Westboro; William Charles Bruzga, Ph. G., South Boston; Malcolm Sherwood Field, Taunton; Edward Rudy Gifford, Ph. G., Dorchester; William Wallace Gifford, Ph. G., Dorchester; Robert Mugerdich Kallejian, Pharm. D., Hartford, Conn.; Albert Solomon Pearlman, Ph. G., Boston.

The following received the degree of Graduate in Pharmacy:

Florin Joseph Amrhein, Roxbury; Gilbert Shove Arnold, Jr., Hopedale; Charles Joseph Babb, Middleboro; Edward Romeo Bouthillier, Milford; Raymond Gannett Cooper, South Natick; John Francis Correa, Jr., New Bedford; John Dorenbaum, Springfield; Ovide Albert Dumas, Worcester; Armand Merrill Dupaul, Southbridge; James George Elkind, Worcester; Fay Harold Elliott, Groveton, N. H.; Theodore Gibbs Flagg, Southborough; Joseph Gagne, Willimansett; George Peter Gakidis, Manchester, N. H.; Howard Francis Gilbride, Malden; Rosamond Alice Guinn, New Bedford; Jesse Earl Henry, Cameron, W. Va.; Elmer Severin Johnson, Orange; Zusya Kagan, Roxbury; Jorge Manuel Menendez, Matanzas, Cuba; Joseph Nathan Meyers, Dorchester; Max Samuel Miller, Cambridge; William Joseph Nolan, M. D., New Britain, Conn.; Federico Emilio Perez, Santiago, Cuba; Howard Richard Pierce, Enfield, N. H.; James Weston Pratt, Quincy; Harry Alexander Shapiro, Portsmouth, N. H.; Revashanker Maganlal Shukle, Matar, India; Oakley Smith Skinner, Windsor, Vt.; Alfred Richard Trimbach, Lewiston, Me.; John William Vigeant, Great Barrington.

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MASSACHUSETTS COLLEGE OF PHARMACY AWARDS A. PH. A. PRIZE MEMBERSHIPS.

Five prizes, each consisting of a nomination to membership in the American Pharmaceutical Association and the first year's dues were offered at the Massachusetts College of Pharmacy during the past year, for the best year's records in the senior subjects. The prizes, with their donors and recipients, were as follows: Pharmacy, offered by Professor E H. LaPierre, awarded to Florin J. Amrhein of Roxbury, Mass.; Analytical Chemistry, offered by Dean T. J. Bradley, awarded

to Armand M. Dupaul of Southbridge, Mass.; General Chemistry, offered by President C. H. Packard, awarded to Oakley S. Skinner of Windsor, Vermont; Organic Chemistry, offered by Treasurer John G. Godding, awarded to Harry A. Shapiro of Portsmouth, New Hampshire; and Materia Medica, offered by Professor H. H. Smith, awarded to James W. Pratt of Quincy, Mass.

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SCHOOL OF PHARMACY OF THE UNIVERSITY OF ILLINOIS.

The Commencement exercises of the School of Pharmacy of the University of Illinois were held in New Central Music Hall, Chicago, April 28. Professor Joseph Price Remington delivered the address; Judge O. A. Harker, Dean University of Illinois Law School and representing President Edmund J. James of the University of Illinois, conferred the degrees.

List of the class: Received the degree of Graduate in Pharmacy: Richard Joel Anderson, Chicago; Samuel Leon Baker, Gary, Ind.; Mike Robert Bianco, DuQuoin; Frederick Evenson Boehm, Neenah, Wis.; Marshall Theodore Brekke, Rice Lake, Wis.; Walter Otto Buckrucker, Chicago; Guy Brooks Davis, Abingdon; Ray Robbins Davis, Abingdon; Grover Oliver Drais, Onawa, Iowa; Harry Leo Eberly, Aurora; Roy Fred Fraser, Elizabeth; Victor Leo Geispitz, Chicago; Louis Andrew Gorham, Chicago; Louis Leo Haffner, Bloomington; Ralph Hawthorne, Alma; Michael Jacobson, Chicago; George William Jindrich, Chicago; Archie Kirkwood Johnson, Joliet; Joseph John Kakacek, Chicago; Rudolph Henry Krebs, Milford; Theodore August Joseph Leckband, Grand Mound, Iowa; Charles James Lesko, Chicago; Stephen Edward Malkewicz, Chicago; Bates A. Marriott, Galesburg; Philip Aloysius Masterson, Clinton, Iowa; Franklin Christopher Mueller, Jefferson, Wis.; Frank Charles Niemeyer, Stockton; Oswald Edward Fred Obermiller, Galena; Joseph Winfred Rayeraft, Springfield; Robert Charles Reed, Quincy; Harold Franklin Seeger, Beardstown; Bayard Edwin Simmons, Chicago; Ernest Lee Slinkard, Grand Junction, Colo.; Clifford Ross Spalding, Clinton, Iowa; August Ferdinand Stahl, Jr., Chicago; Stewart Strain, Chicago; Roy William Woelffer, Lake Mills, Wis.; Lawson Jacob Cooke (Class of '13), Goodland, Ind.; Fred Lehman Leib (Class of '14), Anna; Lillian Vorsanger (Class of '12), Chicago.

Received a certificate of having finished the course successfully. Will receive the degree when the required age and practical experience are obtained: Monte Allen, Gray's Lake; Kenneth Frederick Allman, Rensselaer, Ind.; Edward Anthony Felix Borucki, Chicago; William Stuhlman Bucke, Chicago; Carroll Edwin Bundy, Sheldon; Byron Eugene Clay, Lena; Raymond Earl Faulkner, Fulton; Richard William Goltermann, Forest Park; Sylvester Henry Hojnacki, Chicago; Oscar William Johnson, Chicago; Harry Kanta, Chicago; Edward Joseph Kral, Chicago; Joseph Benjamin Kvasnicka, Chicago; Arthur Henry McKenty, Chicago; Mark Eldon Neville, Gray's Lake; Joseph Pelc, Chicago; Domingo Poli, Guayama, Porto Rico; Young Rey, Soon Chun, Korea; Edwin Robert Riemer, Chicago; Edwin Palmer Scruggs, Livingston, Ala.; Walter Alanson Vander Bogart, Wilmington; Louis Wischnia, Chicago.

Received certificates as special students: LeRoy Eugene Anderson, Moline; Charles Roy DeWitt, Pocatello, Idaho; Samuel Michael Gordon, Chicago; Charles Hugo Grund, Jr., Chicago; Carl William Hanichen, Chicago; Leslie Eugene Harden, Rockefeller; Anton Sylvester Jaglowski, Chicago; Leopold Levinowitz, Chicago; Otto Lisec, Chicago; George Edward Nemec, Chicago; George Ray Olson, Chicago; Lloyd Earl Throckmorton, Peoria; Sidney Bradley Trippett, Texarkana, Ark.; Clarence Edward Wiles, Kankakee.

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TWO SPECIAL LECTURES AT THE JERSEY CITY COLLEGE OF PHARMACY.

The last of the series of special lectures was delivered at the Jersey City College of Pharmacy on Friday afternoon, April 30, the Faculty, the students, the nurses of the Jersey City Hospital Training Schools and many prominent physicians and pharmacists being present.

Dr. Paul S. Pittenger, Pharmacologist of the H. K. Mulford Company, Philadelphia, and an authority on the subject of Physiological Assays, delivered a highly educational and interesting lecture on "Biological Assays." The following is an outline: In-

troductory, Definitions, List of Drugs requiring Biochemic Assays, Variation in Strength of non-standardized preparations, Necessity for Biologic Assay Methods, Standardization of Crude Drugs, and Deterioration.

Dr. Pittenger briefly described and demonstrated one or more methods coming under *each* of the three types, namely: *First type,* Reed and Vanderkleed Guinea-pig method, Houghton's 12-hour method, Famulaner & Lyon's 1-hour method; *second type,* Blood-pressure method for suprarenal extract, Blood-pressure method for ergot; *third type,* Isolated uterus method for Pituitary.

A rising vote of thanks was given to Dr. Pittenger and his Assistant, Dr. Wall, for this excellent lecture and demonstration.

Dr. B. S. Pollak, Medical Director of the Hudson County Tuberculosis Hospital in Snake Hill, addressed the students on the very important subject, "Problems on the Prevention of Tuberculosis." Dr. Pollak explained the origin and the history of the disease and also the various stages, and he undoubtedly convinced his audience that tuberculosis is one of the most dreadful of all diseases and that all precautions should be taken individually as well as municipally and even under federal control.

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NEW ORLEANS COLLEGE OF PHARMACY.

The New Orleans College of Pharmacy held Commencement exercises May 14 in Marquette Hall of Loyola University, the Dean, Dr. Philip Asher, presiding. The A. Ph. A. membership was awarded to Hypolite Rene Xiques. The following is a list of the graduates:

Leonce J. Aucoin, Louisiana; Rene J. Bienvenu, Louisiana; Mertie M. Bloom, Louisiana; Alvin S. Brizzard, Louisiana; Leon Aloysius Gabrol, Louisiana; George D. Comeaux, Louisiana; Fred Rufo Crosby, Louisiana; W. Elmo Doucet, Louisiana; Edgar E. Ewing, Louisiana; John Robert Germany, Louisiana; Harry Goldstein, Louisiana; Antonio M. Gonzalez y Falcon, Cuba; Odon J. Lonibos, Louisiana; Manuel Lopez y Quintana, Cuba; Eloi L. Melancon, Louisiana; Guillermo Perez y Pena, Cuba; Robert Lane Pollock, Louisiana; Laurance Rappleye Rolling, Louisiana; Miss Anna Barbara Schneider, Louisiana; T. A. Scott, Louisiana; Miss Vernona E. Stumpf, Louisiana; J. Warren Tarbox, Louisiana; Eugene Waldemar Vogt, Texas; George B. Welsh, Louisiana; Harold B. Williams, Texas; Hypolite Rene Xiques, Louisiana.

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ST. LOUIS COLLEGE OF PHARMACY.

The Commencement exercises of the St. Louis College of Pharmacy were held in Sheldon Memorial Hall, May 19.

Dr. John C. Falk, President of the College, conferred the degrees. The Graduate in Pharmacy and Bachelor of Pharmacy Classes were introduced by Dr. H. M. Whelpley, Dean, and the Pharmaceutical Chemist Class was introduced by Prof. Charles E. Caspari.

The Valedictory Address, "Drugs and the Man," was delivered by Mr. Arthur E. Bostwick, Librarian of the St. Louis Public Library.

The alumni prizes were conferred by Dr. Wm. H. Thaler, while Dr. O. A. Wall announced the College prizes and honors.

The following degrees were conferred:

GRADUATE IN PHARMACY.

Louis Abramson, Mgline, Tchernigoff, Russia; Clyde Murphy Anderson, Rockville, Mo.; Leslie William Barnes, Cuba, Mo.; George Bosche, Ph. B., 1911, St. Louis, Mo.; Glenn Adrian Burkart, St. Louis, Mo.; Walter Arden Burkart, St. Louis, Mo.; Paul Augustus Burnette, Ph. B., 1913, St. Louis, Mo.; Philip Ludger Chiles, St. Louis, Mo.; Alfred William Couch, De Soto, Mo.; Curt Louis Dauber, Mascoutah, Ill.; Lyman Armenious Demand, Warrensburg, Mo.; Edmunds Grey Dimond, Winona, Miss.; Gustav Adolph Dorullis, Centralia, Ill.; Joseph Frank Evans, Mountain Grove, Mo.; Joseph Frey, St. Louis, Mo.; Carter Giles Gibson, Hope, Ark.; Willard Arthur Guyton, Potosi, Mo.; Theodore Charles Hagenow, St. Louis, Mo.; Jesse Everett Harmon, Houston, Mo.; Samuel Honigberg, St. Louis, Mo.; Walter Edwin Howald, Cuba, Mo.; Walter Sylvester Hunter, Macon, Mo.; Frank Eugene Lane, Jr., St. Louis, Mo.; Lawrence Roscoe Marglous, St. Louis, Mo.; Albert John Martin, St. Louis, Mo.; Otto John Moser, Ph. B., 1910, St. Louis, Mo.; Andrew Louis Muentefering, East St. Louis, Ill.; Theodore John Nelligan, St. Louis, Mo.; Henry William Reiss, St. Louis, Mo.; Charles Herman Riley, Salem,

Mo.; Kenneth Nye Robinson, Warrensburg, Mo.; E. Francis Sennewald, St. Louis, Mo.; Enos Sanford Sisk, Licking Mo.; Othmar John Sum, Washington, Ind.; Clarence Robert Walker, Hermann, Mo.; George Marcus Weiss, St. Louis, Mo.; Floyd Loftus Welch, Warrensburg, Mo.; Louis Franklin Westlake, St. Louis, Mo.; Farrar McNeal Wilson, Lebanon, Mo.; John Zajicek, Collinsville, Ill.

BACHELOR OF PHARMACY.

Herbert William Bixon, Middlebrook, Mo.; Harry Erwin Grafe, St. Louis, Mo.; Leo George Kohl, Belleville, Ill.; Roland Henry Kraege, Yorktown, Tex.; Walter Scott McCormack, Koshkonong, Mo.; Burl Hulbert Smith, East St. Louis, Ill.

PHARMACEUTICAL CHEMIST.

Harold Rufus Rowe, Ph. G., 1913, Willow Springs, Mo.

The recommendation for membership in the American Pharmaceutical Association, with dues for 1915 given by the College, is awarded to Samuel Honigberg, St. Louis, Mo.

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ALUMNI ASSOCIATION OF THE UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

The thirty-third annual reception and banquet of the Alumni Association of the University of Illinois was held at the Congress Hotel, Chicago, Wednesday evening, April 28. One hundred and twenty-five alumni and friends were present. The members of the graduating class were the guests of the Alumni Association, while the guests of honor were Professor Joseph P. Remington, Dean of the Philadelphia College of Pharmacy, and Judge O. A. Harker, Dean of the Law School of the University of Illinois. Toasts were responded to as follows:

The University of Illinois—Judge O. A. Harker.

Pharmacy—Professor J. P. Remington

The Alumni Association—President L. L. Mrazek.

The Faculty—Professor W. B. Day.

The Class of 1915—President H. L. Eberly.

The Class of 1890—Dr. Charles A. Albrecht.

Professor C. M. Snow presided as toastmaster. The occasion was a most enjoyable one and a fitting close for a most successful and largely-attended Commencement

Societies

Related Association Meetings.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

The 1915 convention will be held at Minneapolis, Minn., August 30 to September 5. President, Samuel C. Henry, Philadelphia, Pa.; Secretary, T. H. Potts, Chicago, Ill.

AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS.

The 1915 convention was held at Rochester, N. Y., in May. President, George C. Hall, New York; Secretary, E. L. Maltbie, Newark, N. J.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS.

The seventh semi-annual meeting will be held at San Francisco, August 25-28. President, George D. Rosengarten, Powers-Weightman-Rosengarten Company, Philadelphia; Secretary, John C. Olsen, Cooper Union, New York.

MANUFACTURING PERFUMERS' ASSOCIATION OF THE UNITED STATES.

President, A. M. Spiehler, of Adolph Spiehler, Inc., Rochester, N. Y.; Secretary, Frank L. Carpenter, of Lazell, Perfumer, New York.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION

The 1915 convention will be held at Santa Barbara, Cal., during September, the date to be fixed later. President, Charles A. West, Eastern Drug Company, Boston, Mass.; Secretary, Thomas F. Main, 81 Fulton Street, New York.

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SECRETARIES OF BOARDS OF PHARMACY.

Alabama—E. P. Galt, Selma.

Arizona—Arthur G. Hulett, Phoenix.

Arkansas—J. A. Gibson, Little Rock.

California—Louis Zeh, San Francisco, Suite 909 Butler Buildng, 135 Stockton St.

Colorado, Wm. F. Thebus, Denver.

Connecticut, J. A. Leverty, Bridgeport.

Delaware, J. O. Bosley, Wilmington.

District of Columbia—W. T. Kerfoot, Jr., Washington.

Florida—D. W. Ramsaur, Palatka.

Georgia—Chas. D. Jordan, Monticello.
Idaho, T. M. Starrh, Twin Falls.
Illinois—F. C. Dodds, Springfield.
Indiana—Burton Cassady, West Terre Haute.
Iowa—H. E. Eaton, Des Moines.
Kansas—W. R. Sheriff, Ellsworth.
Kentucky—J. W. Gayle, Frankfort.
Louisiana—Jos. T. Baltar, New Orleans.
Maine—Frank T. Crane, Machias.
Maryland, Ephraim Bacon, Baltimore, 30th and Calvert Sts.
Massachusetts—Albert J. Brunelle, Boston, 22 State House.
Michigan—Ellis E. Faulkner, Delton.
Minnesota—Edward A. Tupper, Minneapolis, 754 E. 14th St.
Mississippi—W. W. Ellis, Fernwood, Pike County.
Missouri—E. G. Cox, Craig.
Montana—W. R. Montgomery, Butte.
Nebraska—J. Earle Harper, Spencer.
Nevada—J. M. Taber, Elko.
New Hampshire—Herbert E. Rice, Nashua.
New Jersey—Henry A. Jorden, Bridgeton.
New Mexico—B. Ruppe, Albuquerque.
New York—W. L. Bradt, Albany, Edu. Bldg.
North Carolina—F. A. Hancock, Raleigh.
North Dakota—W. S. Parker, Lisbon.
Ohio—M. N. Ford, Columbus.
Oklahoma—J. C. Burton, Stroud.
Oregon—J. Lee Brown, Marshfield.
Pennsylvania—L. L. Walton, Williamsport.
Rhode Island—James E. Brennan, Pawtucket.
South Carolina—F. M. Smith—Charleston.
South Dakota—E. C. Bent, Dell Rapids.
Tennessee—Ira B. Clark, Nashville.
Texas—R. H. Walker, Gonzales.
Utah—Walter H. Dayton, Salt Lake City.
Vermont—Mason G. Beebe, Burlington.
Virginia—T. A. Miller, Richmond.
Washington—D. B. Garrison, Connell.
West Virginia—Alfred Walker, Sutton.
Wisconsin—Edward Williams, Madison.
Wyoming—R. A. Hopkins, Cheyenne.

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FLAVORING EXTRACT MANUFACTURERS' ASSOCIATION.

The next meeting of the Flavoring Extract Manufacturers' Association will meet in Cleveland, July 8-10. W. M. McCormick, of McCormick & Co., Baltimore; J. O. Schlotterbeck, of J. Hungerford Smith Co., Rochester, and Frank L. Beggs, of Styron, Beggs & Co., Newark, Ohio, were appointed a committee to make the necessary arrangements for the meeting.

OFFICERS OF PROPRIETARY ASSOCIATION OF AMERICA.

The following officers and members of the Executive Committee of the Proprietary Association of America were elected for the ensuing year, at their annual meeting held in New York City, May 11-13:

President, A. H. Beardsley, Elkhart, Ind.; First Vice-President, William H. Gove, Lynn, Mass.; Second Vice-President, Allen F. Moore, Monticello, Ill.; Secretary-Treasurer, Charles P. Tyrrell, Syracuse, N. Y., re-elected. Executive Committee, Joseph F. Hindes, Baltimore, Md.; R. R. Land, Binghamton, N. Y.; F. K. Hyde, Buffalo, N. Y.; Will A. Peairs, Des Moines, Ia.; Z. C. Patten, Jr., Chattanooga, Tenn.; Carl J. Balliett, Buffalo, N. Y.; Frank Blair, Chicago.

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MANUFACTURING PERFUMERS' ASSOCIATION OF THE UNITED STATES.

The Manufacturing Perfumers' Association of the United States met in New York City, April 27-29.

Resolutions were adopted by the members indorsing the Stevens bill for retail price maintenance on trade-marked and patented articles, also urging the enactment of a bill seeking to have the internal revenue tax on cologne spirits eliminated, and approving a proposal to affiliate with the Chamber of Commerce of the United States.

OFFICERS FOR 1915-1916.

A. M. Spiehler, of Adolph Spiehler, Inc., Rochester, N. Y., was re-elected President of the Association; S. S. West, of the Abner Royce Company, of Cleveland, Ohio, Vice-President, and Frederick F. Ingram, of the Frederick F. Ingram Company, Detroit, Second Vice-President; Walter Mueller, of A. A. Vantine & Co., New York, Secretary, to succeed Frank N. Carpenter, of Lazell, Perfumer, New York, and A. B. Calisher, of Calisher & Co., New York, was elected Treasurer.

Succeeding Theodore Ricksecker, D. H. McConnell and W. A. Bradley, as members of the Executive Board, the following were selected: D. H. McConnell, of Goetting & Co., New York; V. B. Thomas, of Harriett Hubbard Ayer, Inc., New York, and George R. Merrell, of Chicago.

Mr. Rickseeker was elected an honorary member of the Association.

Chairman Walter Mueller of the Committee on Importation and Undervaluation closed his report by stating that the raw materials used by the foreign and domestic perfumers come from the same sources. As much technical skill and ability are employed by the domestic as by the foreign manufacturers. Isn't it easily possible to educate the American public in the preferred use of the domestic perfumes? It is certainly well worth trying, especially now that conditions abroad favor us with every opportunity for expanding our business both at home and in foreign markets hitherto controlled almost exclusively by the European perfume makers.

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SUBJECTS FOR PAPERS.

The Committee on Papers and Queries of the Pennsylvania Pharmaceutical Association has sent out the following topics for papers. We reprint the list, believing that they will suggest subjects for papers to be presented to one or the other Sections of the A. Ph. A.:

1—There is a popular impression that preventive medicine has lessened prescribing by physicians; that drugs and medicaments are being supplanted by vaccines, sera, etc. Is this true?

2—On what basis are nurses entitled to discounts from pharmacists?

3—Open shop on the Sabbath Day. Necessity or greed?

4—Is the labor or the material the more expensive part of the average prescription?

5—Should the pharmacist dispense prescriptions containing poisonous substances without considering in his charge for the same the responsibility which rests upon him?

6—Do you consider the rebate check as clear profit or merely as a refund for overcharge on the cost of merchandise?

7—A simple method is wanted for making, filling and sealing ampoules in the pharmacy.

8—More data is wanted from those who have employed women as clerks in pharmacies.

9—Wanted: A formula for a non-precipitating compound infusion of gentian.

10—What are the advantages of fat free tincture of digitalis over the U. S. P. tincture?

11—Do you know of anything better than chondrus to suspend silver iodide?

12—What is your system of keeping control on dates of biological and similar products?

13—Data is wanted on making "milk of magnesia" from calcined magnesia.

14—Is there any difference from a therapeutical standpoint between Russian petroleum oil and a fully refined Pennsylvania oil of the same specific gravity?

15—Wanted: Your experience in preparing perfumes from so-called concentrations.

16—What attitude toward your customers would you assume were a demoralizing cut-rate advertising drug store to invade your town?

17—On an average business of $10,000 a year and an investment of $5,000, what percent of gross profit would you figure as necessary to pay you an income of $1,200, after all overhead expense was taken care of?

18—Wanted: Examples of methods employed by retail pharmacists in keeping records required under the Federal anti-narcotic law.

19—Is it inimical to the financial interests of the retailer if all medicinal preparations are required to be labeled in such manner as to reveal their composition?

20—How may the enforcement of the "Truth Advertising law" be useful to legitimate pharmacy?

21—Why should not a state law supplement the Harrison law?

22—Why will the Stevens bill never be placed on the statute books?

23—Are the N. A. R. D. and A. Ph. A. asleep at the switch—vide the Paige bill?

24—What benefit to the pharmacist will the Paige bill bring, if enacted?

25—When hard gelatine capsules are immersed in solution of formaldehyde, how is their solubility in the human body affected?

26—Wanted: A simple method for determining the cathartic principles of cascara sagrada.

27—Have you had any experience in using or selling para dichlor benzene?

28—Would an infusion of digitalis, made double strength as to drug and alcohol, to be afterward diluted, keep; would it be as active?

29—Literature on lime liniment as an ointment base is wanted.

30—What quality liquor calcis can be made from calcined dolomite?

31—How do the grocery store and drug store varieties of cream of tartar compare chemically; as to price wholesale and retail?

32—Value of newspaper advertising to the average drug store.

33—To what extent do people become habituated to the use of drugs not ordinarily considered habit forming?

34—How do the various brands of hydrogen dioxide on the market compare?

35—How can the microscope be made to pay for itself in the drug store?

36—What moral support are pharmacists giving toward the enforcement of anti-narcotic laws?

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MARYLAND ASSOCIATION.

The Maryland Pharmaceutical Association will meet June 22-25 at Braddock Heights. T. M. Williams, of Frederick, the local Secretary, and W. L. Pierce, of Baltimore, Chairman of the Entertainment Committee, have prepared an interesting program. Among the entertainments provided will be a trolley trip to Hagerstown and an excursion to Harpers Ferry.

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LOUISIANA PHARMACEUTICAL ASSOCIATION.

The Louisiana Pharmaceutical Association convened in New Orleans, May 11. Mayor Behrman welcomed the visitors and the response was made by E. H. Walsdorf, U. S. Revenue Collector J. Y. Fountleroy explained the Harrison law, Attorney General Rufus Pleasant spoke of the pharmacists' influence as citizens, Dr. Philip Asher represented the American Pharmaceutical Association. The Stevens bill was unanimously favored.

The following were elected officers for the ensuing year: F. A. Earhart, New Orleans, President; Charles McDonald, Port Allen, First Vice-President; Eugene H. Daste, New Orleans, Second Vice-President; George W. McDuff, New Orleans, Secretary, and J. T. Baltar, New Orleans, Corresponding Secretary. The Executive Committee: Peter Rupp, E. S. Bernadas, Joseph P. Walker, S. J. Peters and Marshall B. Castiex. Delegates to the American Pharmaceutical Association: F. C. Godbold, W. G. Hudson and Philip Asher, M. D.

The Executive Committee will select the place of the next meeting. Baton Rouge and Alexandria have extended invitations.

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ARKANSAS ASSOCIATION.

The thirty-third annual meeting of the Arkansas Association of Pharmacists was held in Pine Bluff, May 11-13.

The election of officers for the ensuing year resulted as follows: Booker Latimer, of De Queen, President; W. T. Seawell, Pine Bluff, First Vice-President; A. G. Brown, Luxora, Second Vice-President; Miss Mary A. Fein, Little Rock, re-elected Secretary and Treasurer; J. S. Shields, Forrest City, Chairman of the Executive Committee.

The matter of the next meeting place was left with the Executive Committee. Little Rock and Texarkana both desire the 1916 convention. Texarkana druggists contemplate a joint meeting of the Arkansas and Texas Associations.

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MISSOURI PHARMACEUTICAL ASSOCIATION.

The Missouri Pharmaceutical Association will hold the Thirty-seventh Annual Meeting at Pertle Springs, Tuesday, June 15, to Friday, June 18, inclusive.

President O. J. Cloughly has been active during the past year in the interest of the retail pharmacists. He will report the part taken by Missouri in defeating the proposed war tax on pharmacists.

Professor Francis Hemm, for many years the efficient Chairman of the Committee on Papers and Queries, is making every effort to have a variety of papers appealing to the interest and welfare of pharmacy in Missouri.

Dr. Leo Suppan, Historian, will report what has been accomplished in the way of assembling material pertaining to Missouri pharmaceutical history.

F. H. Fricke, Chairman of the Committee on Legislation, will have a pleasing report, inasmuch as the legislature adjourned without enacting bills detrimental to pharmacy.

Various other standing committees are at work and will submit timely reports.

The Missouri Pharmaceutical Travelers' Association, with J. J. Murphy as President, is looking after the entertainment features. Travelers' Day, as usual, will be celebrated Thursday.

The Missouri Board of Pharmacy will hold an examination Monday and Tuesday. Prospective candidates should communicate at once with the Secretary of the Board, Edwin G. Cox, Craig.

F. W. Robinson, Warrensburg, is the local Secretary and has charge of all arrangements at that end of the line.

As usual, delegates will be in attendance from neighboring state pharmaceutical associations.

H. M. WHELPLEY,
Permanent Secretary.

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KANSAS PHARMACEUTICAL ASSOCIATION.

The Kansas Pharmaceutical Association met in Wichita, May 11-13. Including the families of members, nearly 700 were in attendance. More pharmacy and less of the restaurant idea was advocated. Reform in the drug store was the keynote of an address by J. S. Chism, who spoke for making the business more attractive to better educated young men, who objected to the needlessly long hours. The Stevens bill was endorsed and a strong resolution passed encouraging the authorities in the rigid enforcement of liquor laws.

W. J. Bangs of Madison was re-elected President of the Association; E. E. Bloom, Hutchinson, First Vice-President; B. C. Culp, De Soto, Second Vice-President; D. von Riesen, Marysville, Secretary; J. M. Brunt, Topeka, Assistant Secretary; J. Schmitter, Gypsum, Treasurer, re-elected, and Professor L. E. Sayre, Lawrence, Librarian, re-elected.

J. Floyd Tilford of Wichita was elected Chairman of the Executive Committee; the other members are: R. B. Bird, Winfield; Harry Dick, Lawrence; Edward Dorsey, Ottawa; C. C. Reed, Salina.

The next meeting of the Association will be held in Kansas City, May, 1916.

The Pharmacist and the Law

NEW IOWA LAWS.

The Iowa Association bills that were passed by both houses and are now part of pharmacy laws are:

The Brammer-Jackson bill amends the Pure Drug act so that everybody handling drugs or medicines (including the doctors) must comply with its provisions and be subject to inspection by the pharmacy commission.

The Becker-Taylor bill amends the present pharmacy law so that the State Board can prosecute violations of the pharmacy laws without having to prove a specific sale in each and every case. Convictions under the old law were difficult to obtain because of lack of evidence.

Anti-Narcotic legislation was secured by amendments to different selections of the present statutes. Illegal sale and use by those licensed under the National Act are taken care of under the unprofessional conduct and injunction acts.

The Pharmacy Board has been placed on a salary basis and the state has been divided into three districts, with one member of the board in each of the districts and responsible for the enforcement of the pharmacy laws in his district.

An appropriation has been secured from the state for equipping a laboratory for the use of the board.

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NEW JERSEY NEW ANTI-NARCOTIC LAW.

The New Jersey Anti-Narcotic Law (Ostrom Act) makes it a misdemeanor to sell, give away, except upon the prescription of a duly registered physician, and also to have in one's possession any cocaine, beta-eucaine, alpha eucaine, tropocaine, novocaine, stovaine, alypin or any salt, derivative or chemical compound of any of these substances or any preparation, admixture or compound containing any of them, or their salts, derivatives or chemical compounds, or chloral hydrate, opium, morphine, codeine, heroin, ethyl morphine (dionin), diacetyl morphine (heroin), or any salt, derivative or chemical compound of such substances.

AMENDED NEW YORK ANTI-NARCOTIC LAW.

The New York Anti-Narcotic Law conforms to Harrison law as to amounts of exempted narcotics; permits the refilling of prescriptions calling for the exempted amounts of narcotics; words the directions for filing prescriptions in accordance with the Harrison law; permits use of the federal narcotic order blanks instead of state blanks now demanded; compels a physical examination of the patient by the physician before the latter prescribes or dispenses the narcotic; modifies the clause providing for the legal commitment of an addict; and makes the dispensing of narcotics to children under sixteen years a felony.

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OHIO LEGISLATION.

The Platt Law as it may now be called, since there is little doubt of the Governor's approval, places the enforcement of the laws with the State Board of Pharmacy or its Secretary. Substantially with reference to Narcotic Legislation it is an enactment of the so-called Duffey Act changed, only, in that it exempts also preparations which do not contain more than one grain of codeine to the fluid or solid ounce. In this respect a new provision has also been added under which habitual users of narcotics may be examined by a physician appointed by the Probate Judge, and upon certificate issued by such physician, any physician licensed under the laws of Ohio is then authorized to prescribe such drugs for habitual users. The certificate is to be in force for such purpose for a period not to exceed ninety (90) days. The provision is of very doubtful value and is certainly an interference with the practice of legitimate physicians such as has never been contemplated by pharmacists.

With reference to the Poison Law feature of the Platt Bill, it simply places with the Board of Pharmacy the enforcement of the existing Poison Law.

The White Bill, which has also been enacted in the Legislature and which awaits the action of the Governor, provides for a prerequisite in the way of general education and graduation from a College of Pharmacy. The new law will not become operative until 1917.—From report of the Committee on Legislation to the Cincinnati Branch, A. Ph. A., by Chairman F. H. Freericks.

Necrology

THOMAS F. RAYMOW.

Thomas F. Raymow, a member of the Faculty of the Brooklyn College of Pharmacy, serving as lecturer in pharmaceutical Latin and instructor in pharmacy and drug assaying, died of heart disease on April 12, 1915, at the age of thirty-six, at his residence in Flatbush. Until November of last year, Professor Raymow conducted a retail drug store at Beverly road and Coney Island avenue, Brooklyn, when he sold out in order to devote his entire time to teaching and laboratory work. He was active in pharmaceutical affairs, being a member of the Kings County Pharmaceutical Association, of the New York State Board of Pharmacy, and of the American Druggists' Syndicate. He joined the American Pharmaceutical Association in 1913. He is survived by a widow and two children. J. W. E.

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WILLIAM H. WOOD.

William Henry Wood, President of the Maine Pharmaceutical Association, and one of the best known pharmacists in the Pine Tree State, died at his home in Sanford, Maine, on May 19, 1915, after an illness of several months.

Mr. Wood was born in Windham, Me., December 20, 1872. He received his early education in the public schools of Windham, and graduated from the Gorham High School. He then took a course in a business college and later entered the drug store of B. L. Stanwood of Portland as a bookkeeper. Here he made a study of the drug business and decided to make it his life work. In 1895 he went to Springvale and bought the drug store of Dr. B. M. Moulton. Mr. Wood received his collegiate education in the Buffalo School of Pharmacy, graduating in 1899. In the big Springvale fire of April 15, 1905, Mr. Wood's store was destroyed. He opened a small store in one of the first buildings erected in the city after the fire, but soon sold out to L. B. Trafton, and accepted a position as clerk in a Boston drug store, and later, Mr. Wood conducted a drug store at Beverly, Mass., but soon sold this and on December 1, 1908, bought the drug store of Charles A. Trafton in Sanford, which he built up into a most successful business.

Mr. Wood was elected President of the Maine Pharmaceutical Association at Bangor in 1914, and the choice was a most popular one. He served on various committees of the Sanford Board of Trade, and last year was president of that body. He was town clerk of Sanford from March, 1901, to March, 1903. He served several years on the Republican Town Committee prior to the campaign of 1912, when he joined the Progressive Party. He was a member of the Unitarian Church and was active in the organization of this church in Sanford. He was a member of the Springvale Lodge, No. 190, F. & A. M., White Rose Chapter, of Royal Arch Masons, Fluellen Tribe, I. O. R. M., Mousam River Lodge, K. of P.; and Washington Council, J. O. U. A. M.

Mr. Wood was married on Christmas day, 1895, to Miss May Weymouth of Portland, Me., who survives. He is also survived by his mother in Windham, and a brother, Bert Wood, of Boston. J. W. E.

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FRANK D. MORSE.

Frank Dana Morse, of Portland, Me., died in that city on March 30th. Mr. Morse was born in Portland in 1873, was an honor graduate of the New York College of Pharmacy, and was connected with H. H. Hay Sons, the well-known drug firm of Portland, for twenty years. Mr. Morse was unmarried; he is survived by two sisters.

He became a member of the American Pharmaceutical Association in 1902.

J. W. E.

Council Business

COUNCIL LETTER No. 20.

Philadelphia, Pa., March 19, 1915.

To the Members of the Council:

Gentlemen—The following communication has been received:

"Members of the Council:

Gentlemen—Bids for the composition, printing and binding of the Year Book, 1913, (Volume 2), were invited from the J. B. Lippincott Co. of Philadelphia, the Stoneman Press Co. of Columbus, Ohio, W. J. Dornan of Philadelphia, and the Eschenbach Printing Co. of Easton, Pa.

The Committee on Publication made a careful examination of the bids and found that the two lowest bidders were the Stoneman Press Co. and the Eschenbach Printing Co., and these companies were then asked to submit a tentative estimate of cost based on three thousand copies of the book, having 300 pages of 10 point leaded composition, 100 pages of 8 point leaded composition, and 50 pages of 6 point leaded composition, and paper, printing and binding as per copy, in accordance with the terms and conditions set forth in specifications furnished.

The paper in the original bids was specified as 24 x 38, 65 pound, 480 sheets to the ream, and this being heavier than the 1912 Year Book, these firms were asked to name the allowance that would be granted if 25 x 38, 60 pound, 480 sheets to the ream paper was used instead. The estimates submitted were as follows:

STONEMAN PRESS CO.

For your information we submit the following:

300 pages, 10 point, leaded 2 point @ 68c per page	$204.00
100 pages, 8 point, leaded 2 point @ $1.00 per page	100.00
50 pages, 6 point, leaded 2 point @ $1.65 per page	82.50
Difference between 6 point leaded and solid per page	.60
The above item, and items of tabular matter, figure work, brace work, and formulas, cannot be determined until after completion of the book.	
3000 copies, 450 pages, no composition, including paper, press proofs of galleys, make-up, press work, wrapping and cartons, binding, labeling (labels not addressed by us) ready for delivery f. o. b. Columbus to authorized agent of the Association for	1350.00
	$1736.50

If 25 x 38, 60 pound paper is used, instead of 25 x 38, 65 pound paper, the following allowance will be made: 450 pages, $20 (same rate for more or less pages).

ESCHENBACH PRINTING CO.

Assuming the following estimated number of pages of the three kinds of composition, 3000 copies of your book will cost according to the above figures as follows:

300 pages 10 pt. leaded composition	$0.82	$246.00
100 pages 8 pt. leaded composition	1.01	101.00
50 pages 6 pt. leaded composition	1.78	89.00
Paper, printing and binding per copy	.375	1125.00
		$1561.00

The substitution of a 25x38, 60 pound paper for the sheet you have specified which is equivalent to a sheet 25x38—70 you will save $33.00 from the above figures. The chief saving, however, would be in postage and express rates.

The price quoted above includes the cost of

wrapping and furnishing of cartons ready for mailing or expressage, but does not include the addressing and stamping; this will cost 1 cent per copy additional.

From this data, it is evident to your Committee on Publication that the bid of the Eschenbach Printing Co. is $172.50 less than the bid of the Stoneman Press Co. for the *heavier* paper, and $185.50 less for the *lighter* paper, and the Committee therefore decided, subject to the approval of the Council, to award the contract to the Eschenbach Printing Co. as the lowest bidder.

With reference to the facilities of the Eschenbach Printing Co. for handling the work, it may be stated that this company prints the "Journal of the American Chemical Society," "Chemical Abstracts," and "The Journal of Industrial and Engineering Chemistry," published by the American Chemical Society, and with reference to the character of their work and service, Charles L. Parsons, Secretary of the American Chemical Society, writes us as follows:

"I will state that the Eschenbach Printing Co. have done faithful and prompt work for the American Chemical Society. We have several times revised our contract and put out bids to other firms, but in every instance have gone back to the Eschenbach Printing Co. during recent years. We have only good words for the service they have rendered to us. Proofs have always been sent in promptly, and they have, I think, one of the most efficient proof readers in the country. I am very glad that I can give this favorable report."

The Secretary of the Columbia University of the City of New York writes:

"The Eschenbach Printing Co., of Easton, Pa., has done a great deal of work for us in the past few years, and we have found them very satisfactory."

Very truly yours,
J. W. ENGLAND,
Chairman of the Committee on Publication.

Do you approve of the action of the Committee on Publication in awarding the contract for printing the 1913 Year Book (Volume 2) to the Eschenbach Printing Co. of Easton, Pa.? This will be known as *Motion No. 34 (Approval of Action of Committee on Publication in awarding the contract for printing the 1913 Year Book (Volume 2) to the Eschenbach Printing Co., of Easton, Pa.).*

J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

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COUNCIL LETTER No. 21.

Philadelphia, Pa., March 30, 1915.

To the Members of the Council:

Gentlemen—*Motions No. 32 (Appropriation of $100 from Centennial Fund for Research Work on Medicinal Plants, etc.), No. 33 (Election of Members; Applications Nos. 88 to 101, inclusive)*, and *No. 34 (Approval of Action of Committee on Publication in Awarding the Contract for Printing the 1913 Year Book (Volume 2) to the Eschenbach Printing Co., of Easton, Pa.)*, have each received a majority of affirmative votes.

The following communication (March 17) addressed to the Council, from E. G. Eberle, of Dallas, Texas, has been received:

"I am advised of my election as Editor of the Journal of the American Pharmaceutical Association.

I feel assured that the Council members have voted their conclusions relative to that which they deemed for the best interests of the Association.

Aside from presenting my application, the only effort put forth by me was to assure them that these were my views and that I would accept their judgment, whatever that might be, accordingly.

I now desire to thank the Council for the honorable and responsible position conferred upon me, and inform them that I will exert my best efforts for the Association and in serving the membership.

In connection with the subject of program for the next annual meeting of the Association, W. C. Alpers writes:

"I would like to make the following suggestion in reference to the program of our next meeting. Ever since the present method of electing officers of the Association has been in use, complaints have been made that the installation of the new officers is not conducted properly. In former years this installation was one of the most pleasant and dignified parts of the meeting. Everybody looked forward to it with pleasure and some of the nicest speeches of our records were made on that occasion. I would suggest that the former method of installation be revived and that a fixed hour be set for it, and therefore propose that the program be changed so that after the line: 10:30 A. M., Final General Session (Friday), the following be inserted. 12 M., Installation of Officers."

The "Tentative Program for the Sixty-third Annual Meeting" adopted provides for, on Friday, August 13, the "Final General Session" at 10:30 A. M., and an "Adjourned Final General Session" at 1:30 P. M. The "Installation of Officers" in the past has generally been the final act of the final session. If Dr. Alper's suggestion is approved by the Council it might be well to make the hour at the time of the Adjourned Final Session (1:30 P. M.) instead of noon.

The following communication from T. A. Miller, President of the National Association

of Boards of Pharmacy, to the Secretary of the Council has been received:

"Replying to your letter of the 18th inst., in regard to the program, will say that at our meeting of the Executive Committee held in Washington last week, and also a conference with similar committees from the Conference of Pharmaceutical Faculties, we decided that we would hold our meeting on Thursday, Friday and Saturday preceding the meeting of the A. Ph. A. so that it would not be necessary to hold any dates open during the meeting of the A. Ph. A. If you would transmit this to the Council and thank them for the courtesy that they have been extending to us, I would appreciate it very much."

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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COUNCIL LETTER No. 22.

Philadelphia, Pa., April 10, 1915.

To the Members of the Council:

Gentlemen—Motion No. 31 (C. L. No. 18, 62) having been approved by the Council and Mr. Eugene G. Eberle having accepted election as Editor and Advertising Manager, arrangements were made whereby he assumed the duties of the office on April 6, 1915, at Columbus, Ohio. It was at first thought possible that Mr. E. C. Marshall might be released on April 1, to comply with his expressed wish to be relieved from active duty as soon as possible, Mr. E. G. Eberle beginning service April 1. But Mr. Eberle could not reach Columbus until April 6, and Mr. Marshall remained in charge of the Journal until Mr. Eberle's arrival.

The Committee on Publication recommend to the Council that, as Mr. E. C. Marshall was relieved from duty on the Journal by Mr. E. G. Eberle on April 6, Mr. Marshall be paid for one week's service in April, and be given three weeks' vacation with pay from April 7, at the same rate of salary he has been receiving as Acting Editor.

Very truly yours,
J. W. ENGLAND,
Chairman of Committee on Publication.

Do you favor the above recommendation of Committee on Publication? It will be known as *Motion No. 35 (Payment for Mr. Marshall's Services and Vacation)*.

Motion No. 36 (Election of Members). You are requested to vote on the following applications for membership:

No. 102. Herbert Ninian Beall, 1525 Connecticut Ave., N. W., Washington, D. C., rec. by Samuel L. Hilton and H. E. Kalusowski.

No 103. Francis Joseph Perusse, 2740 Arlington Ave., Lincoln, Neb., rec. by Rufus A. Lyman and Elsie Day.

No. 104. Albert John Martin, 2230 Oregon Ave., St. Louis, Mo., rec. by Glenn A. Burkart and Theo. C. Hagenow.

No. 105. Henry Louis Jerger, Jr., Broad St., Thomasville, Ga., rec. by R. Thomas and W. B. Day.

No. 106. Anthony C. Cost, 18 South Market St., San Jose, Cal., rec. by N. A. Pellerano and Wm. B. Day.

No. 107. William Robert Englert, 407 Commercial St., Elko, Nevada, rec. by W. B. Day and J. M. Taber.

No. 108. James Frank McGogy, 4727 Brooklyn Ave., Seattle, Wash., rec. by C. W. Johnson and Edith Hindman.

No. 109. Dr. Joila Estrella Delgado, Jagney Grande, Province of Mantanzas, Cuba, rec. by Jose P. Alacan and Jose Guillermo Diaz.

No. 110. Mattys Jongeward, 154 A St., N. E., Washington, D. C., rec. by W. B. Day and J. W. England.

No. 111. Henry Otto Haeusgen, Anchorage, Ky., rec. by Oscar C. Dilly and Arthur L. Sicter.

No. 112. Rudolph Victor Miersch, 1132 W. Broadway St., Louisville, Ky., rec. by Oscar C. Dilly and Arthur L. Sicter.

No. 113. Gordon Laten Curry, 104 W. Chestnut St., Louisville, Ky., rec. by Oscar C. Dilly and Arthur L. Sicter.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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COUNCIL LETTER No. 23.

Philadelphia, Pa., May 1, 1915.

To the Members of the Council:

Gentlemen—*Motion No. 35 (Payment for Mr. Marshall's Services and Vacation)*, and *No. 36 (Election of Members; Applications Nos. 102 to 113, inclusive)*, have each received a majority of affirmative votes.

The following communication has been received from General Secretary Day:

"I have been in correspondence with five or six parties in regard to the stenographic report of the 1915 Convention. I have selected Lenhardt & Co. of Chicago as a firm of reliable stenographers who have made the lowest bid and who apparently can offer the best service. This is a Chicago firm, but will maintain offices in San Francisco during the summer and will be in a position to take care of our work satisfactorily.

"The offer of Lehnhardt & Co. is as follows:

"To furnish two stenographers for five days each	$ 75.00
estimated—500 pages of transcript at 40c a page	200.00
Total	$275.00

"A page of transcript includes approximately 250 words

"We have paid for reporting the Convention at Detroit $379.18. I desire to have permission of the Council to let the contract for

reporting the Convention to Lehnhardt & Co."

Do you favor award of above contract? This will be known as *Motion No. 37 (Award of Contract for Reporting 1915 Annual Meeting, A. Ph. A., at San Francisco)*.

The following report has been received:

Camden, N. J., April 10, 1915.

To the Members of the Council of the American Pharmaceutical Association:

Gentlemen—In compliance with the directions of the Council, I have sent to the Editor for publication in the Journal, monographs on the following topics, and submit the list of these monographs to the Council as a record of the progress in the work of the Committee on Unofficial Standards.

Respectfully submitted,
GEORGE M. BERINGER,
Chairman.

Alumini Chloridum	Chimaphila
Alumini Sulphas	Chirata
Antomonii Oxidum	Condurango
Antimonii Sulphidum Purificatum	Conium
	Convallaria
Berberis	Crocus
Bismuthi Citras	Cupri Sulphas
Brayera	Cypripedium
Bromum	Eupatorium
Calcii Phosphas Præcipitatus	Euonymus
	Extractum Carnis
Calendula	Fæx Compressa
Cassia Fistula	Ferri Hypophosphis
Cataria	

Motion No. 38 (Election of Members). You are requested to vote on the following applications for membership:

No. 114. Washington Hayne Zeigler, 213 Rutledge Ave., Charleston, S. C., rec. by E. A. Ruddiman and Wm. B. Day.

No. 115. Harry F. J. Guenther, 6430 St. Clair St., Cleveland, Ohio, rec. by Eugene R. Selzer and H. M. Whelpley.

No. 116. Milton M. Taylor, 602 Franklin St., Tampa, Fla., rec. by E. Berger and D. W. Ramsaur.

No. 117. Carlisle Laughlin, 2032 Bancroft Way, Berkeley, Cal., rec. by J. H. Beal and Albert Schneider.

No. 118. Maud Lambert, Ph. G., Franklin Road Pharmacy, Roanoke, Va., rec. by Ernest L. Brandis and Albert Bolenbaugh.

No. 119. Chas. A. Fraser, Red Rock, Okla., rec. by J. C. Burton and H. M. Whelpley.

No. 120. John D. Humphrey, Bristow, Okla., rec. by J. C. Burton and H. M. Whelpley.

No. 121. Hilary S. Shackelford, Wynnewood, Okla., rec. by J. C. Burton and H. M. Whelpley.

No. 122. Morris Wilson Waters, 1344 Wisconsin Ave., N. W., Washington, D. C., rec. by S. L. Hilton and J. W. England.

No. 123. L. C. Gill, University Club, Ancon, Canal Zone, Panama, rec. by H. M. Whelpley and J. W. Mackelden.

No. 124. Bolivar Jurado, Panama, Republic of Panama, rec. by H. M. Whelpley and J. W. Mackelden.

No. 125. Kenneth Nye Robinson, 121 West Gay St., Warrensburg, Mo., rec. by J. W. Mackelden and Albert J. Martin.

No. 126. Martin Elliott Shultz, Punta Rassa, Fla., rec. by H. M. Whelpley and J. W. Mackelden.

No. 127. Ellis Jayson Starwalt, 1371 12th St., Detroit, Mich., rec. by F. F. Ingram, Jr., and Geo. J. Elliott.

No. 128. James Albert Winterbottom, Pharmacist, U. S. N., Las Animas, Colorado, Naval Hospital, rec. by J. A. Rupert and H. M. Whelpley.

No. 129. George W. Rhodes, Newark, Del., rec. by John O. Bosley and R. M. Kaufman.

No. 130. Walter R. Keys, Clayton, Del., rec. by John O. Bosley and R. M. Kaufman.

No. 131. Owen Hilary Tansey, 1106 Green Ave., Westmount, Province of Quebec, Canada, rec. by Alex. J. B. Moore and Wm. B. Day.

J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

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WAR DEPARTMENT.

List of changes of stations covering period ending March 31, 1915, in the cases of Sergeants First Class, and Sergeants, Hospital Corps.

SERGEANTS FIRST CLASS.

William F. Coleman, from the U. S. Disciplinary Barracks, Leavenworth, Kan., to the 2nd Division for station.

Frank Holt, from the Philippine Department, to the U. S. on furlough.

John R. Behre, from the Philippine Department, to the U. S., on furlough.

Nealey Prater, from the Philippine Department, to the Presidio of Monterey.

SERGEANTS.

James J. Johnson, from the Transport "Sumner," to the U. S. Mine Planter Gen. Royal T. Frank.

Halbert M. Beasley, from the transport "Kilpatrick," to the Attending Surgeon's Office, Port of Embarkation, Galveston, Texas.

Joseph Alston, from the Presidio of Monterey, to Field Hospital Company No. 2.

Charles H. Dabbs, from the Department Surgeon's Office Eastern Department, to the Philippine Department.

Otto F. Van Buren, from the Presidio of San Francisco, to Ft. Lawton.

Albert C. Calish, from Ft. Lawton, to the Presidio at San Francisco.

Frank W. Chamberlin, from Field Hospital Company No. 3, to Ambulance Company No. 8.

George H. Spicer, from Ambulance Company No. 3, to Ambulance Company No. 8.

James L. Wood, from Ft. H. G. Wright, to Ft. Terry.

Robert E. L. Rogers, from the Philippine Department, to Ft. Monroe.

Charles Wood, from the Philippine Department, to the U. S. Disciplinary Barracks, Ft. Leavenworth, Kan.

Walter S. McWhorter, from the Philippine Department, to Jefferson Barracks.

Sebald J. Fichtner, from the Philippine Department, to the U. S., for discharge.

Ernest Arias, from the Philippine Department, to the Letterman General Hosp.

William Q. Fancher, from the Philippine Department, to the U. S. for furlough.

Charles N. Abel, from the Philippine Department, to Ft. DuPont.

Harry Cook, from the U. S. Disciplinary Barracks Ft. Leavenworth, to Washington Barracks.

Arthur M. Spencer, from Ft. Liscum, to Ft. Lawton.

John A. Baker, from the Walter Reed General Hospital, to Field Hospital Co. No. 5.

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NATIONAL COMMITTEE ON THE PHARMACEUTICAL SYLLABUS.

BULLETIN IV.

E. G. Eberle has been appointed editor of the Journal of the American Pharmaceutical Association and requests, for use as frontispieces in the Journal, the plates of portraits of deceased pharmaceutical workers that were prepared for the Syllabus but not used. The Secretary has sent the plate of A. B. Prescott to Mr. Eberle, as requested, for use in the May number of the Journal and the following motion is submitted to the Committee:

Motion 271, by E. G. Eberle, seconded by T. J. Bradley:

That the Journal of the American Pharmaceutical Association be permitted to use the Committee's plates of portraits of deceased pharmaceutical workers.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

NILES, E. H.,
From 1500 E. Michigan St., Indianapolis, Ind.,
To 725 Century Bldg., Indianapolis, Ind.

SORDS, THOS. V.,
From 315 Pearl St., Cleveland, Ohio.
To 1410 W. 25th St., Cleveland, Ohio.

BEST, JOHN,
From residence unknown.
To 2015 E. 12th St., Denver, Colo.

DYER, NICHOLAS E.,
From 981a Tremont St., Boston, Mass.,
To residence unknown.

MARCUS, SAMUEL,
From Ft. Mills, Corregidor, P. I.,
To residence unknown.

BARTELLS, GEO. C.,
From 130 E. State St., Camp Point, Ill.,
To 314 No. Illinois St., Camp Point, Ill., (Adams Co.).

GUERRERO, LEON M.,
From 147 Calle Nueva Ermita, Manila, P. I.,
To 147 Calle A. Mabini Ermita, Manila, P. I.

MONTGOMERY, MOSES,
From Manila, P. I.,
To Scout Garrison, Ft. Mills, P. I.

SUPPAN, LEO R. A.,
From 2648 Russell Ave., St. Louis, Mo.,
To 2112 Oregon St., St. Louis, Mo.

RODEMOYER, WM. E.,
From Hazelwood & Murray Aves., Pittsburgh, Pa.,
To 773 Hazelwood Ave., Pittsburgh, Pa.

WIEDMANN, HUGO E.,
From 1105 Holland Bldg., St. Louis, Mo.,
To Chemical Bldg., St. Louis, Mo.

EMLEN PAINTER

Elected President of the American Pharmaceutical Association at the San Francisco Meeting in 1889. Died before the expiration of his term of office, January 10, 1890.



Emlen Painter
1814–1890
Thirty-seventh President of the
American Pharmaceutical Association

The Journal of the American Pharmaceutical Association

Volume IV JULY, 1915 No. 7

Office of Publication, 63 Clinton Building, Columbus, Ohio.

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Entered at the Postoffice at Columbus, Ohio, as Second-Class matter.

Papers and communications for insertion in the JOURNAL should be sent to the Editor, E. G. Eberle, 63 Clinton Bldg., Columbus, Ohio. Subscriptions should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

Emlen Painter

Emlen Painter was elected president of the American Pharmaceutical Association at the San Francisco meeting in 1889, and laid down life's burdens January 10, 1890, therefore was not permitted to preside in convention.

The frontispiece seems to us appropriate, in view of the fact that the American Pharmaceutical Association convenes again in San Francisco after the lapse of a quarter of a century; the president elected at that meeting was identified with pharmacy of the East and West.

The subject of this brief sketch was born at Concord, Pennsylvania, in 1844, educated in Wilmington, Delaware, and graduated from the Philadelphia College of Pharmacy, with honors, in 1866. The following year he came to San Francisco, accepting a position with H. P. Wakelee. In 1867 the firm of Painter and Calvert was established and continued for ten years, when the partnership was dissolved, Mr. Painter retaining the store at the corner of Clay and Kearney; later he opened several other stores, all of which he successfully conducted.

His name is closely associated with the founding of the California Pharmaceutical Society and the College of Pharmacy. To the latter he gave of his time for many years and with his co-laborers had the satisfaction of seeing the school devlop into an institution of importance to pharmacy.

Mr. Painter returned to Pennsylvania for rest when his health began to fail, and thereafter decided on making his future home in New York City. Here he purchased the pharmacy of John Sheddon, at Broadway and Thirty-fourth streets, and under his management the business prospered. Mr. Painter became identified with the New York College of Pharmacy, was elected one of the trustees and Chairman of the Board of Examinations. He was one of the editors of the National Formulary.

In the fall of 1889 Mr. Painter disposed of his business on account of impaired health and had departed for the South, when increasing feebleness persuaded him to return to his home at Spuyten Duyvil, N. Y., where the final summons came January 10, 1890.

Professor P. W. Bedford, in speaking of Mr. Painter, paid this tribute: "He was a man of remarkable activity, of honest, earnest opinions, and when satisfied that he was right, he was not to be swerved by motives of either opposition or any other cause. He pursued what he believed to be right to the end."

Contributed and Selected

A PROPOSAL FOR THE ELEVATION OF THE PROFESSION OF PHARMACY.*

C. F. NELSON, PH. D.

That Pharmacy, as it exists today, is not a profession in the sense that law, medicine and dentistry are, I think we are all, at the outset willing to admit. That it is, on the other hand, more than a business pure and simple seems equally evident. The Pharmacist thus appears in society in a double role,—he is a professional man and he is a business man—many say he is neither.

There are many reasons why this condition exists,—why it has been necessary for the pharmacist in America to become much of the tradesman; to step down, as it were, from a full-time professional schedule to that of half-time merchant and half-time pharmacist. But it is not my purpose to discuss with you at this time. I desire rather to invite your attention to another, and, as it seems to me, a far more important aspect of this subject, namely; Must pharmacy always occupy this middle ground,—stand aloof from the professions on the one hand and apart from the domain of business on the other? Why should this anomalous condition continue? Must the pharmacist always straddle the fence,—one leg in professional soil, the other on *business* territory? Must he always stand in the middle of the Rubicon, and, as Daniel Vorhies Pike, the Kokomo lawyer in the "Man from Home" put it, "Get hell from both sides?"

The old professional ideal in pharmacy is dead. It died with the advent of the modern pharmaceutical house. We should not try nor should we desire to bring it back. We must set our eyes towards a newer and better light and follow in its path as our fathers before us followed in theirs.

When I was a boy of fourteen, my father apprenticed me to a stern and exacting member of the old school,—a man who believed that anyone who did not make all of his pills, plasters, ointments, tinctures and even fluidextracts was unworthy of the name of pharmacist. I have vivid recollections of the old back-room where all of this "pharmaceutical cooking" went on; of the big black kettle in which we made our lead plasters; of the large percolators for making fluid-extracts of sarsaparilla; of the way we rubbed and rubbed to incorporate the mercury with the lard in preparing mercurial ointment; of the hours spent in coating pills with balsam of tolu dissolved in ether,—but, as I look back on it all now, I can see the many crudities and imperfections that crept in in spite of our professional zeal and care. We had no way of determining the purity of the ingredients used in making our preparations; no means, except purely physical

* Read at a recent meeting of the Kansas Pharmaceutical Association.

ones, for testing the strength of the completed product; no machinery to make our pills round and mechanically perfect. We were, in other words, compounders of our own products and, therefore, professional enough but very inefficient as measured by modern methods.

The history of economics offers us a striking illustration of the futility of clinging to antiquated ideals. We are all familiar with the fact that the introduction of modern machinery revolutionized industrial conditions, bringing about disruption of the old trades. Society had to reorganize itself to meet the new conditions. Much hardship had to be undergone; many were the bitter denunciations of the new regime. And yet it prevailed.

The guild of stone cutters vowed eternal vengeance on the new machinery which cut stones better and faster than they could—they would have none of them; their old methods were the best, they wanted their old trade to be as it always had been and yet,—the machine prevailed.

Woman, who had up to this time always worked in the home, was with remarkable rapidity thrust out of that shelter and put into the factory; again the age prevailed, society could do nothing to prevent it.

There are many pharmacists who cling fondly to the old ideal of preparing most of their own preparations. In a measure the pharmacist must always do some of this, but it is futile for him to attempt to compete with the modern manufacturer in the preparation of an ever increasing number of pharmaceutical preparations. The manufacturer has at his command the purchase of the best drugs at the cheapest prices. He can make a preparation faster and, therefore, more cheaply. By working with large quantities he can subject it to a number of rigid checks to insure its absolute accuracy. In short, with his machine he can make a better product more easily than the retailer can without machinery.

If then, we are ready to admit that the old standards and ideals are outworn, useless because times have changed, we are ready to ask, Are there any new ones to take their places? Is there a set of new ideals for the modern pharmacist which will prevail in the present age, which will place him in the ranks of the professional man where he really belongs? I think there is, and, while a complete solution of the problem is not at hand, there are many avenues of light, some of which the present generation may only behold, and not walk in, while others are open for his progress, if he has faith enough and the strength to believe in himself and the willingness to turn conviction into action.

A profession remains a profession because in the long run—in terms of decades, its members perform a real service to society. The pecuniary reward for professional service is after all secondary. A specialist must first of all be desirous of curing his patient; of being interested in the case for itself. If he have only the desire to make a profit he soon fails.

Much of modern business today has become infused with this professional ideal of service. Many business men look upon their establishments as places where the public can be served—"After we have served you we will speak of the reward." The pharmacist was probably the first store-keeper to carry out his ideal. He "served better than he knew" when he first introduced the sale of postage stamps; when he put a telephone in a convenient place in his store for

the use of his customers, only to bother him; when he bought a city directory for the use of all and even furnished scratch paper free of charge. Many will say he did it to draw trade. (If there is much trade drawn in that way his competitors would soon have found it out.) No, he did it because he had a good heart; because, way down in him was the mouldering desire to be of service. He showed that he had the professional ideal. Here was humble service to be sure, but service it was. Something for nothing was the unformulated and latent slogan within him, but it was still there.

If you agree with me then that the pharmacist has within him the true professional desire of service, let us ask are there no larger and richer fields open to him in modern life? Can he not aspire to the plane of the physician and the lawyer and still remain in his chosen calling? Must he be content to sell postage stamps, furnish telephone and city directory to the people of his community or can he enlarge his sphere of action and in so doing also reap his due pecuniary professional rewards?

To those who follow the trend of modern medicine, nothing is clearer than that clinical diagnosis is becoming more and more subject to chemical and bacteriological analyses. The mere recital of symptoms by the patient does not satisfy the up-to-date physician. He is finding it increasingly necessary to check this information by actual chemical and bacteriological data. It is precisely here where the pharmacist can become the physician's colleague. Can give advice and help as a bacteriological and chemical expert, can aid in important diagnoses and thus earn the lasting respect of the individuals of his community. Precisely here, can the pharmacist take his place beside the physician as a real professional man and with him help in the elimination of pain and suffering. There are hundreds of things the physician wants to know which the pharmacist could answer if he only would, e. g., What does this urine contain? Are there any tubercular bacilli in this sputum? Does this throat swab contain the germs of diphtheria? Is this blood serum positive or negative for typhoid fever or syphilis?

All of these questions should be answered daily, many times during the day, but there is no one now to do it because the physician has neither the time nor the necessary equipment, nor even the technique for that matter, to carry out all of these tests. I think it a conservative statement to say that in most communities there is today a latent demand for at least 500 Widal tests for typhoid fever each year. And as we shall see later, the demand for analytical work does not begin to stop here.

We are living in an age of standardization, everything under the sun is being standardized; medical schools, law schools, schools of pharmacy, cities of the first class, cities of the second class, pure milk, ice cream, lemon extract and spirit of camphor. Many of these you see call for the services of a chemical analyst. We are also ever increasingly in need of the services of the analyst in our every-day life; to see that the products we buy are what they claim to be and to satisfy ourselves that the products we manufacture and sell meet with the required standards; an ever-increasing number of manufacturers, business men and private citizens need to have materials constantly analyzed. Here

again there is a vast latent demand waiting only for some one to do it; this milk man wants his milk tested; this ice cream manufacturer his cream, probably his sugar. A baker would gladly pay for an analysis of a flour he bought in large quantities, or his egg powder, or his cooking oil. A manufacturer wants to know if the water he uses is suitable for use in his boilers, or if the coal he bought is what he contracted for. All of this work is truly professional in character. The pharmacist already has his store, his chemicals, his chemical training; and he is therefore the logical man to undertake it. If he rises to the occasion he cannot fail to advance himself, at the same time to elevate the character of his profession.

I have tried to show that there is a vast latent demand in every community for real analytical work of a chemical and bacteriological character, and that the pharmacist, by reason of his training and equipment, is the logical man to undertake it. I have also tried to point out that if he does attempt this work he will pull his profession upwards with him. The matter may probably be summed up in this manner. The modern pharmacist should be not a "pharmaceutical cook" whose ideal lies in making a few galenical preparations, but first of all a "prescription specialist," a man who understands how to compound a prescription accurately and scientifically, who can determine and check the purity and strength of the ingredients that enter into it by chemical and biological methods; and, in the second place, he should be a chemical and bacteriological expert to help the physician diagnose his cases; to help the manufacturer and the private citizen solve their chemical problems. He should be able to run for the office of city chemist and city bacteriologist. We don't have many such men in Kansas as yet, but we will have, and soon.

The time then seems ripe for the establishment of at least small analytical laboratories in connection with our drug stores, not excepting even those in very small communities. The beginnings may be small and modest. The outlay in money need be very slight. One may choose to specialize on only a few kinds of analyses at first, say, examination of throat swabs, sputum analyses, or Widal's test for typhoid fever, and then gradually widen out as one's experience grows. The druggist is always wanting to put in new side lines to improve his business. Certainly a departure of this sort would be valuable as a money maker after it was worked up, and it would do much to elevate the profession as a whole.

The laboratory should occupy a prominent place in the front part of the store. It may thus be made to pay for itself as an advertising medium. To say that it will improve the looks of a store more than the modern soda water fountain needs no argument. The effect it will have on the physician and also on the trade seems obvious. That it can be made profitable in most cases looks equally evident. What expense will be involved in the establishment of such a laboratory? To answer this question we must of course know on how large a scale we wish to operate. But suppose we get quotations on a moderate chemical and bacteriological outfit. An expenditure of less than $500.00 will give us all we need, will equip us with first class analytic balances, microscopes, ovens, autoclaves, glassware and chemicals, will give us in fact a very good equipment for making most of the determinations we will be called upon to make. When this

amount is put along side of what a good many druggists pay for soda fountains, many of which do not much more than pay for themselves, but are only used to draw trade, I think you will see that a neat analytical laboratory will serve the latter purpose much better and, at the same time, fill a real need. The expense of operating such a laboratory need not be very large. Many druggists detail a man to look after soda-water and cigars and sundries, at a cost of $50 or $60 per month. The average young man that enters the analytical laboratories of our large corporations after leaving college begins at $60 to $75 per month. A bright graduate of the three or four years' course in pharmacy has all the basal education he needs to begin in such a laboratory and can help with the general drug business until there is enough work to occupy his entire time in the laboratory.

There is one matter, in this connection, that I wish particularly to call your attention to at this stage: The pharmacist has for years received in our schools of pharmacy a good chemical training but he has not made proper use of it. He has, it seems nearly always, taken a back seat, has not mixed in the fray, and consequently, in a short time after leaving college, he feels incompetent to anything more than fill prescriptions or sell cigars. Imagine a physician doing the same. He comes out of college as "green" as the pharmacist, but he has to "pitch in" and do things he has never done before. He does things every day which he never was taught how to do while in college. Naturally, most pharmacists have not been through the routine of most of the common bacteriological and chemical tests that would be required of them if they set out to become analysts, but they have the basal education necessary and it is only a matter of a little study, nerve and practice for them to become experts along this line. Moreover, the routine analysis of milk, water, foods, drugs, urine, blood sputum, serum, etc., have become so systematized that details and directions of procedure are easily available. It only takes a little time and practice for any one with a pharmacist's previous training to become expert in carrying them out.

If you have followed me in the rather scattered remarks I have made you will see that I have tried to establish the following points:

First—That pharmacy as it is today is a "mongrel creation" without standing in either the professional or business worlds.

Second—That the old ideal of pharmacy as a place where galenical preparations should be manufactured has to be in a large part abandoned because of the futility and undesirability of competing with the modern first-class pharmaceutical houses.

Third—That while the pharmacist should progressively abandon making most of his galenical preparations, he should increasingly strive to maintain his standard as a professional man by becoming a better "prescription compounder" and should bend his efforts towards the accurate checking of the drugs he buys and dispenses, rather than to their manufacture.

Fourth—That I have tried to show that the pharmacist has never lost the professional ideal of service and that modern life has a place for him in which to exert his very best efforts in a truly professional way.

Fifth—We have seen that there is a vast latent demand for analytical work of a chemical and bacteriological character from both the physician and the public in general. This work the pharmacist should do and can do by establishing an analytical department (even though it be very small) in connection with his store.

Sixth—That the analytical laboratory will become a source of profit to the druggist, it will serve a real need in the community, and last but not least, by doing this scientific work, the pharmacist will establish himself on a plane with the physician and lawyer and thus elevate his calling to that of a true profession.

SOME THOUGHTS FOR TEACHERS.

ZADA M. COOPER.



Almost every magazine one picks up and even the newspapers are printing articles criticising the public school system. No part of it escapes; the kindergarten and the university alike get their share. "What is Wrong with the College," "Why I am Poorly Educated," or similar titles are a familiar sight. Apparently, these critics of our schools lose sight of the fact that all sorts of people go to school and *almost* all sorts go to college. They forget that in the manufacture of anything the raw material controls the nature of the finished product; as some one has aptly said, "Critics of colleges never consider the kind of grain that comes into our hoppers."

We, who are teaching in colleges of pharmacy, cannot help wondering if we are in any way concerned with the imperfections, if those faults are in any way reflected in our work. We should expect, perhaps to see the chief evidences in freshmen classes and are at once confronted with the idea that possibly a large proportion of students conditioned or failed during this year can trace their difficulty to the public schools.

In any consideration of the subject, the mentally unfit, those actually lacking in capacity, may be disregarded. There are such, but very few reach college. The individuals who are below the average of intelligence are not many because they are eliminated earlier in their school career. Speaking of average intelligence it can be said with little fear of contradiction that any one of average intelligence who works conscientiously will get through college creditably.

To go back to the original question, there is no doubt that many general reasons are involved. Conditions are similar to those existing in freshmen classes in any professional school or even in the colleges of liberal arts. Perhaps, the whole situation can be summed up under two heads, insufficient preparation and lack of thoroughness in that preparation. Some colleges of pharmacy are handicapped in having students who are not graduates of high

schools, though most teachers will concede that a high school education is little enough general education as a foundation for the study of pharmacy and the sooner all colleges adopt that as a minimum entrance requirement, the better it will be for them and for the profession as a whole.

However, insufficient preparation is a minor difficulty when compared with the lack of thoroughness; the one is within our control, the other entirely beyond it. We can say what the preparation shall be so far as quantity is concerned, but the quality of that work we may not specify. Even if we could, surface indications are of little value. Grades should mean something, they usually do mean something, and yet they may be absolutely worthless in foretelling what the individual may do in college. Doubtless every teacher in every college of pharmacy has had, not once, but again and again, in beginning classes some students who had so little knowledge of the most fundamental things as to arouse the wonder whether they knew the multiplication table or could read the English language intelligibly. Yet those very persons may have presented the best of credentials.

Even men who have done some years of work in a liberal arts college or who have a degree are among the failures in professional schools. The explanation of this is simple. The slipshod superficial work of the preparatory school has been continued, aggravated, perhaps, by the elective system which permits the choice of "snap courses," thereby fixing more permanently the bad habits of earlier years.

If it were possible to trace the real cause it would probably be found in the early years of a pupil's career, possibly at the very beginning. The child gets into bad habits of thought and bad habits of work and as the years go on the habits grow until it is almost impossible to accomplish anything in college. Probably, always in the beginning, these bad habits are acquired unconsciously but later they may be systematically practised. However acquired or however fostered, the result is much the same. It is impossible to rear a superstructure on such an inferior foundation. Sooner or later it is bound to topple.

There is one fault of the public school system that deserves more than passing attention because it is one which is carried right into college. In the words of a great educator: "This part and that part of the individual are developed most methodically with the result that the modern useful mind is full of water-tight or idea-tight compartments, snug places where assorted bits of information are safely tucked away but there is no communication between." Doubtless every teacher has observed this very fact when students fail to apply in one class room what they have learned in another. They appear not to dream that different class rooms are on the same planet. As this same author says further: "They are taught everything except how to pull themselves together, to think and act as entities, as personalities," and yet "Instant command of all the faculties at once is the one thing that life demands of us in its crises."

Educators are fully awake to the faults of the public school system and are, perhaps, doing all that they can to remedy them. At least, that is not our problem and discussion of these faults is unavailing except that thorough understand-

ing of any condition makes it easier to meet. Theorizing is useless, and there is little to suggest as to how we can overcome the conditions. The little that can be done must be largely personal assistance to each individual to help him to undo somewhat the faults, to replace his careless habits with careful ones, to teach him how to study.

Teaching students how to study can be to a considerable degree the outcome of an instructor's method of presentation. For example, the facts in any subject should not always be given directly to a class. If a textbook is used study is not limited to it but reference works are supposed to be consulted. In giving citations exact pages or paragraphs to be read is not as good as to ask that certain points of interest be looked up. Recitations should be conducted in such a way that a student must have read the references in order to recite. In assigning a lesson, attention should be directed to the points that must be investigated, the necessity for knowing the reasons involved in various processes, but students should be expected to dig out the facts themselves. Outside written work should not be resorted to for it puts a premium upon dishonesty. However great the effort on the part of an instructor, some students will not do the reading themselves but trust to providence or their neighbors. On the other hand, many can be induced to search out the subject and once they get the habit, they begin to acquire the spirit of learning which is the secret of success.

We must make our courses attractive and interesting, and attractive should not mean easy. Naturally an easy course may be attractive but the reverse is not necessarily true. In fact, the course ought to necessitate hard work but not disagreeable work. It is for us to make knowledge so vital that students cannot help being interested.

Whether dealing with poorly equipped students or the best, the function of every college is two-fold, one of which is sometimes minimized in practice or lost sight of entirely. The teaching of facts is not likely to be forgotten but it is not so easy to remember that the intelligence must be trained, that sound judgment and good common sense should be cultivated. It is general wisdom and ability to use his accumulation of facts, to correlate them when some specific situation arises, which makes the individual successful. No teacher can be present to direct the application (in real life) of information he may be trying to get into the minds of his class, no teacher can anticipate the emergencies that may arise. The teacher's duty is to try to awaken or to increase the enthusiasm for learning and to do this so thoroughly that students develop power to investigate for themselves and to apply for themselves their stores of information. Students, if they hope to succeed when they have left the college of pharmacy for the larger college of life, must acquire personal initiative, must be intellectually alert. Lyman Abbott summed up the situation in a few words when he said: "Education is not only the acquisition of information, it is even more the development of capacity to deal with the facts thus ascertained, it has come to be the acquisition of power even more than the acquisition of information."

Probably no definite system is available to teachers. There is no royal road to learning either for teacher or student. The ultimate end of independent thought and action on the part of students must never be lost sight of. Eternal vigilance

is the price. It is a laudable ambition for teachers to want degrees and what they stand for, but there is no degree which guarantees ability to teach. Teachers should be men and women with good red blood in their veins, not just "semi-vitalized text-books."

LIQUID PETROLATUM, RUSSIAN AND AMERICAN.

E. H. GANE, PH. C.



Liquid Petrolatum is destined to be, if it be not already, the most extensively used medicinal substance at our disposal.

In the crude form, petroleum has been more or less in use for many centuries, references to it being found as far back as 600 B. C. The use of the highly refined product known as Liquid Petrolatum is, however, of very recent origin, dating back only to the early eighties of the last century. Since that time in one form or another it has been recommended as a cure for almost every ill that flesh is heir to. In addition, it has also been used as a substitute for or as an adulterant of lard, butter and vegetable oils used for culinary purposes and it was investigations into its value as a food that led ultimately to its present enormous vogue in internal medicine.

It was early determined that Liquid Petrolatum had no food value, but passed unchanged through the intestinal tract. Nevertheless, petroleum emulsions, plain or combined with other medicaments, have been largely prescribed for some years and usually with very good results, despite the dogmatic assertions from test-tube investigators to the effect that these preparations were valueless or fraudulent. We know now that, while the claims made for these products were inaccurate, the preparations had real value due to the corrigent action of the petroleum on the intestinal tract.

Liquid Petrolatum as an internal remedy is distinctly an American idea. Little attention was paid to the work of earlier investigators by physicians until a series of papers presented to medical societies in Ohio and Indiana between the years 1900 and 1903 led to its continued use in that part of the country as a remedy for chronic constipation and intestinal obstructions. Since that time its use has been developed enormously, being especially aided by the strong recommendation of the great English surgeon, Sir William Arbuthnot Lane, given at the Congress of Surgeons held in New York in 1912. Much of the credit for its discovery as a therapeutic remedy has gone to Mr. Lane, though many American physicians antedated him in using it.

It is not necessary to do more than mention that the value of Liquid Petrolatum for medicinal purposes lies in the fact that it is inert. It is possibly the only medicine that has no medicinal action, but works purely mechanically. It is

simply a lubricant and its action is similar to that of oil on rusty machinery. It lubricates a defective drainage canal and its value appears unquestioned.

What we are particularly concerned with is the quality of the oil that should be used for medicinal purposes. This is especially important just now in view of commercial conditions in the petroleum industry. The U. S. P. requirements are exceedingly lax and admit of a wide range of products being used. Up to the outbreak of the war Russian petroleum was mainly used as a source of Liquid Petrolatum, and during the last two years enormous quantities of "Russian Oil" have been consumed. The quality was not always all that could be desired.

Russian and American petroleums are different in composition. American oil consists mainly of methane hydrocarbons with some olefines, while Russian oil is composed of naphthene hydrocarbons. The Russian oil can be refined more easily and more cheaply, so that it has held the market to the exclusion of American oil, the only medicinal oils on the market of American origin being oils that had been treated by filtration and decolorization with bone black. These oils did not hold their color and had also a strong fluorescence so that on esthetic grounds alone they were not popular.

The European war, however, cut off supplies of Russian oil completely so that we have been forced to look to American refineries for supplies of "White Oil." Owing to uncertainty as to how long the war would last refiners were not at first anxious to put up a plant that would have to be scrapped as soon as the war was over, but when it was evident that the war would last some time, several plants were started, and so rapid has been the progress made by our chemists in refining American oil that today one or two refineries are turning out preparations that compare favorably with the best Russian oils. This is no small achievement to have accomplished in so short a period of time.

The quality of the oil used as a basis for Liquid Petrolatum is of the highest importance and too little attention has been paid to this point. Oils of all grades have been sold for medicinal purposes and some of the largest houses have supplied and are supplying products that were far from being what we might expect from such sources. The only requirements insisted on in many cases were that the oil should be colorless, tasteless and odorless. But these requirements are by no means adequate. Many Russian oils that met these requirements were still not fit for the uses to which Liquid Petrolatum is put and the same is even more true of American oils.

Being used solely as a mechanical aid, Liquid Petrolatum must be taken for long periods and often in large doses, and, therefore, extra precautions must be used in obtaining an oil that is *inert*. Despite its chemical properties, petroleum is by no means inert physiologically. For a long time it has been known that workers in petroleum refineries were especially liable to skin affections of a serious and even malignant character. The recent researches in England of Ross and his co-workers have demonstrated that petroleum, among other products, contains a substance that possesses the property of causing increased cell growth. The importance of this discovery cannot be over emphasized for it is easy to see

how important a factor it may be in connection with the internal consumption of Liquid Petrolatum. Were the oil only taken for short periods the presence of this substance might not be very material, but it can readily be seen that the constant presence in the intestinal tract of a substance possessing the above mentioned property might result in most serious consequences especially in cases where there is a lesion of some sort. Every precaution should be taken to insure the elimination of this substance from petroleum for internal administration.

It is also important that Liquid Petrolatum be free from any other substances that might be active physiologically. This is especially necessary with American oil which contains varying proportions of olefines or unsaturated compounds. These hydrocarbons may enter into combination with bodies of an acid nature, with acetones, aldehydes and compounds having an hydroxyl group. They may enter into combination with substances in the alimentary tract, and while little is at present known of their behavior in this connection, care should be taken to exclude them from Liquid Petrolatum the use of which is based on the idea of its inert character.

In addition to these possible impurities, Liquid Petrolatum may contain sulphur compounds which are frequently present in oils of a certain character. Sulphur compounds are objectionable for many reasons, in particular because they tend to prevent absorption of iron which is so necessary to proper functioning of the system. They should be eliminated from Liquid Petrolatum. Lastly the oil should be absolutely neutral.

Fortunately there are a series of very simple tests by which Liquid Petrolatum can be controlled and no oil should be used for internal administration that does not pass, first of all, the following tests which are those laid down in the 1914 edition of the British Pharmacopœia, and which will probably be followed in the ninth revision of the U. S. P.

(1) When 3 millilitres are heated with an equal volume of sulphuric acid in a test tube placed in boiling water for ten minutes and frequently shaken, the acid layer, after separation, is not darker than pale brown.

(2) A mixture of 4 millilitres of Liquid Petrolatum, 2 millilitres of absolute alcohol and 2 drops of a clear saturated solution of lead oxide in solution of sodium hydroxide (20 per cent.), remains colorless when kept at 70° C. for ten minutes.

(3) 10 millilitres of alcohol (90 per cent.) boiled with 5 millilitres of Liquid Petrolatum are not acid to litmus.

These tests insure absence of olefines and other organic impurities, sulphur compounds and acids used in purifying the oil but they do not insure absence of the substance which promotes cell growth. The researches of Ross have shown, however, that this substance, the exact nature of which is not at present known, is soluble in water and can be eliminated by washing the oil with hot water. This additional precaution should, therefore, be taken in refining petrolatum for medicinal use.

A word may be said in reference to the question of density. One of the objections to the continued administration of Liquid Petrolatum was that after a

time it had a tendency to exude involuntarily from the rectum. For this reason physicians have been demanding heavy oils, some even prescribing solid petrolatum with a view to avoiding this trouble. It has been found, however, that this involuntary evacuation was due wholly to too large dosage and occurs with heavy as well as light oils. It can readily be corrected by diminishing the dose and, therefore, as the lighter oils are more easy to take and require a smaller dose they are now used to as quite a large extent as the heavier oil. The question of dosage is one that each patient must determine for himself or herself. No hard and fast quantities can be set down. Some patients require large doses frequently, while others can obtain satisfactory results by as little as a teaspoonful two or three times a day. The usual starting dose is one to two tablespoonfuls at bedtime gradually reducing the dose as conditions improve.

Another debatable question is the time at which Liquid Petrolatum should be administered. Many physicians advise that it be given only on an empty stomach the claim being made that administering with food is liable to cause digestive disturbances as the "oil coats the particles of food and prevents action of the gastric juices."

Anyone with an elementary knowledge of physics will recognize the fallacy of this argument and the impossibility of coating moist food particles with oil. The statement that has also been made to the effect that prolonged use of the oil will coat the intestinal canal with oil and prevent absorption can be characterized as equally absurd being opposed to all known physical laws. Furthermore, the fact that the amount of oil ingested can be obtained in toto from the feces also disposes of this argument. It is axiomatic that oil and water will not mix.

Finally the question that naturally comes up just now is which oil is the best, American or Russian? The answer is that to all intents and purposes one is as good as the other for internal administration, provided it is properly refined and stands the tests before given. The American oil in general is of lighter gravity than the Russian, but is, however, of greater viscosity. American oil of a gravity of .845 can be prepared of as great a viscosity as the Russian oil of .885 gravity. This is due to the presence of higher paraffines in solution and is the reason why American oil, as at present manufactured, has no "cold tests." Russian oil remains clear at 0° C, while American oil, even the less viscous product, becomes turbid at that temperature. This does not, however, affect its medicinal properties.

In conclusion, attention is invited to the accompanying table giving the results of an examination of a series of samples obtained from manufacturing houses and from retail stores which shows that there is a great deal of oil being sold that does not come up to the requirements of a pure inert oil for medicinal purposes.

A word of advice to the retailer may not be out of place and that is to buy your oil from a drug house that has been identified with the preparation and sale of medicinal products rather than from those concerns that cater to lubricating and automobile supply houses.

SAMPLES OF MINERAL OIL OFFERED FOR SALE BY VARIOUS CONCERNS.

No. of Sample Source	S. G.	Lead Oxide Test	H_2SO_4	Color and Odor
1—Wholesale Drug House.	.840	No Color	Very Faint Color	Colorless Odorless
2—Oil Supply House.....	.851	No Color	Yellow	Fluorescent Petrol Taste
3—Mfg. Pharm. House...	.858	No Color	Dark Brown	Fluorescent Petrol Taste
4—Jobbing House.....	.847	No Color	Slight Yellow	Colorless Odorless
5—Oil House.....	.850	No Color	Reddish Brown	Strong Fluorescence
6—Retail Association.....	.857	Brown Color	Dark Brown	Yellow Fluorescent
7—Oil Refinery.....	.850	No Color	Brown, Nearly Black	Fluorescent
8—Mfg. Pharm. House....	.854	Brown Color	Dark Brown	Colorless Sl. Fluorescence
9—Wholesale Drug House.	.844	No Color	Slight Yellow	Colorless Odorless
10—Wholesale Drug House.	.848	No Color	Faint Color	Colorless Odorless
11—Oil Refinery.....	.841	Brown Color	Black	Fluorescent Petrol Taste
12—Oil Refinery.....	.847	No Color	Slight Yellow	Colorless Odorless Petrol Taste

All these samples were American oil. Sample No. 10 was an "extra heavy" oil and was almost solid at a temperature of —5° C. At +5° C. it was quite cloudy, and while the oil was very viscous, the gravity was little above that of the ordinary light oil. The viscosity was due to dissolved paraffine. Of the above 12 samples only numbers 1, 4, 9 and 10 can be considered really fit for medicinal use. Sample No. 5 is a filtered oil that has been freely sold to the retail trade.

EMETINE HYDROCHLORIDE AS AN AMEBICIDE AND HEMOSTATIC.

FRANCIS E. STEWART, PH. G., M. D., PHAR. D.

I. EMETINE HYDROCHLORIDE.

Emetine Hydrochloride, or Emetinæ Hydrochloridum, is the hydrochloride, $C_{30}H_{44}N_2O_4$, 2HCL, $2H_2O$, of an alkaloid found in *Cephælis ipecacuanha*. According to "New and Non-official Remedies," published by the Council on Pharmacy and Chemistry of the American Medical Association (see Journ. A. M. A., July 5, 1913), it occurs as a white crystalline powder, soluble in water and alcohol. The aqueous solution of emetine hydrochloride is practically neutral toward litmus. The general alkaloidal reagents precipitate emetine, even from dilute solutions. Alkalies precipitate emetine from aqueous solutions of its salts. A freshly prepared concentrated solution of ammonium molybdate in concentrated sulphuric acid (Froehde's reagent) is colored green by emetine hydrochloride.

"If about 0.10 gm. of emetine hydrochloride be dissolved in water, the solution made alkaline with potassium hydroxide, shaken with ether till nothing more is extracted, then acidified and made alkaline with ammonia water and again extracted with ether, the second ether extraction on evaporation should yield a residue which, when treated with Froehde's reagent, should not become purple.

"If emetine hydrochloride be dried to constant weight at 100° C. the loss in weight should not exceed 8 percent of the original substance.

"*Actions and Uses.*—Emetine acts similar to ipecac but is relatively more nauseating and less emetic, and causes relatively less renal irritation, but more cardiac depression. Emetine hydrochloride in the form of injections has been reported to be of especial value in amebic dysentery.

"*Dosage.*—Expectorant, from 0.005 to 0.01 gm. (1/12 to ⅙ gr.). From 0.01 to 0.02 (⅙ to ⅓ gr.) causes emesis, but cephæline is preferred as an emetic. By hypodermic injection, 0.03 gm. (½ grain)."

Amebicidal dose, in amebic dysentery, for hypodermic medication: ½ to ⅔ grain, for adults; ⅓ grain for children of about eight years of age (Rogers). Amebicidal dose, in pyorrhea alveolaris, ½ of 1 percent solution to be injected into the pockets of infection daily for at least five days, then every other day until a total of about ten treatments have been made (Barrett); ½ grain daily for three to six days hypodermically (Bass).

II. EMETINE HYDROCHLORIDE AS AN AMEBICIDE IN AMEBIC DYSENTERY.

In 1902 and 1903 Rogers* reported in the British Medical Journal the common occurrence of amebic dysentery in India, where it had not previously been recognized, and established its role as the cause of tropical or amebic abscess of

* Leonard Rogers, M.D., F.R.C.P., I.M.S., Professor of Pathology, Calcutta.

the liver, the relationship of which to antecedent bowel disease was up to then much disputed in the East.

In the course of his investigation he ascertained that ipecac has a definite specific action in the treatment of amebic disease, but is of little or no value in the bacillary type. In 1907, he demonstrated that the same drug will rapidly cure amebic hepatitis (amebic inflammation of the liver) in the pre-suppurative stage, and thus prevent the formation of amebic liver abscess if given in good time.

When analyzing a series of cases of amebic dysentery, treated with full doses of ipecac, from 30 to 60 grains a day, Rogers was struck by the fact that he had lost one-third of his cases, while another one-fourth had left the hospital uncured, declining to go on with the treatment. The great majority of his patients were either very acute or advanced chronic cases, while several died within two days of admission, being hopeless on their first arrival at the hospital. In some serious cases the good effect of the drug was very evident, but nevertheless in many it was clear that sufficiently large doses could not be administered by the mouth in time to save the graver cases. Recalling to mind Vedder's experiments in Manila with fluidextract of ipecac as an amebicide, Rogers tested the effects of the alkaloid, emetine, derived from ipecac, in the form of hydrochloride, on undoubted ameba dysenterica in the mucous stools of amebic dysentery patients, and found in a dilution of 1:100,000, that the emetine hydrochloride kills them. He therefore determined to try emetine hydrochloride hypodermically in severe amebic inflammation of the colon. The results were most remarkable and thoroughly demonstrated its superiority over ipecac as a remedy for amebic dysentery.

Rogers' brilliant discoveries were the cause of a decrease in the annual death rate from abscess of the liver in the British Army in India, to only 30 percent of its former steady number within three years, and a similar decrease in the death rate from abscess of the liver in the Calcutta General Hospital.

Until more recently ipecac did not find favor among American physicians. However, in 1909, Simon, of New Orleans, advocated its use in large doses in amebic bowel disease, and further verification of its value was furnished by the experience of Dock, Roberts, Brown, Zeiler, Allan, Lyons and other competent observers. From this time onward, ipecac and its alkaloid, emetine in the form of hydrochloride, grew in favor and became popular throughout the world. At a meeting of the Academie de Medicine of Paris on February 25, 1913, Chauffard reported a case of dysenteric abscess opening into the bronchi, in which rapid recovery took place. At a meeting of the Societe Medicale des Hopitaux of Paris on April 11, M. S. Costa reported a case of amebic abscess of the liver cured by the same treatment, but aspiration was also performed. In the China Medical Journal for March, Dr. J. Preston Maxwell reported ten cases of amebic dysentery treated with great success by injection of emetine. Later Chauffard reported to the Societe Medicale des Hopitaux de Paris another case of dysenteric abscess successfully treated with emetine. Dr. Rouget reported that he had suppressed an amebic abscess of the liver by a subcutaneous injection of emetine. Dr. Flandin reported the case of a woman who had contracted amebic dysentery

in Madagascar, and presented sometime later an abscess of the liver which opened into the bronchi and necessitated an operation. The patient was cured by subcutaneous injections of emetine hydrochloride in 0.08 gm. (13/16 gr.) doses per day.

Dr. Dopter gave an interesting account of a case of amebic dysentery which had resisted the usual methods of treatment and was completely cured by three injections of emetine hydrochloride, the first dose 0.02 gm. (5/16 gr.) and the other two in doses of 0.04 gm. (⅝ gr.) each.

Dosage in Amebic Dysentery.—Rogers, in commenting upon the administration and dosage of emetine hydrochloride in amebic dysentery, advises that solutions should be made by adding the emetine hydrochloride to previously boiled water or normal salt solution, but prefers doses put up in sterile glass ampoules ready for use. The solution should be isotonic with the blood. In the treatment of amebic dysentery, he began with one-third grain doses, equal to 30 grains of ipecac, but now uses one-half or two-third grain doses in adults, while one-third of a grain may be given with perfect safety in children of about eight years of age. He says that he has several times given as much as a grain at once, two or even three times a day in adults, and has never seen any depression or other alarming symptoms follow its use. Very occasionally, severe pain may result at the seat of injection, but this is quite exceptional, and there is usually no sign of any local reaction. Half a grain twice a day give uniformly good results, or a larger dose once a day may be used if this is more convenient.

Quite as striking is the rapidity of the cure by emetine. Thus in a series of cases, the average stay in hospital of the recovering ipecac cases was 16.4 days, and of the emetine ones 7.2 days, including one day they were kept under observation, if not urgent cases, before the treatment was begun. Further, the average number of days under ipecac before the stools became finally normal was 11.4, and the average amount of the drug given amounted to 406 grains; while the corresponding figures for the emetine treatment were respectively 2.35 days and 2 grains of the drug, equal to 180 grains of the powdered ipecac.

Diagnostic Value of Emetine Injections.—Another interesting and valuable fact in connection with the use of emetine hydrochloride in curing dysentery and amebic abscess is that the action is specific. So thoroughly specific is this action that Rogers believes that where clinical microscopic facilities are not available the response to the use of emetine is diagnostic. Where the dysenteric symptoms are not affected by a few injections of the drug, the conditions have always been found to have been due to some other cause than the ameba. The blood and mucus nearly always finally disappear from the stools of an amebic dysentery patient within two or three days, four days being the longest period he has observed. In bacillary dysentery, on the contrary, the drug exerts little or no effect, so that the failure of the emetine injections to produce a very material improvement in the stools within two or three days affords very strong evidence that the disease is not amebic in origin.

III. EMETINE HYDROCHLORIDE AS AN AMEBICIDE IN PYORRHEA ALVEOLARIS.*

Barrett, in 1914, working in collaboration with Allen J. Smith, Professor of Pathology in the School of Medicine, University of Pennsylvania, announced the discovery of the Endameba buccalis as the primary etiological factor of pyorrhea alveolaris. The report was founded upon 45 cases of suppurative affections of the gums and pericemental tissues, in all of which without a single exception, parasitic amebas were discovered in active motility.

While confident of the actual pathogenic importance of these parasites from their uniformity of occurrence and distribution and from the evidence of their ingestion of leucocytes and erythrocytes, the authors did not feel justified in attempting inoculating experiments. They applied another test for pathogenicity which seemed conclusive. Resource was had to the use of emetine, a specific against the endamebas of dysentery. Accordingly, 13 cases of pyorrhea alveolaris, or Rigg's disease, were treated locally by injecting into the pockets of infection (which in that disease occur at the margin of the gums) one-half of one percent of emetine hydrochloride. In several of these 13 cases, the pus disappeared from the pockets completely to gross inspection in twenty-four hours after application. This result was attained in all the cases after three daily local treatments.

Dr. C. C. Bass and F. M. Johns, Tulane University, College of Medicine, New Orleans, La., working independently of Barrett and Smith and without knowledge of their investigations, arrived at the same conclusions. Their first paper on the subject, "The Specific Cause and the Prompt Specific Cure of Pyorrhea Alveolaris or Riggs' Disease," appeared in the New Orleans Medical and Surgical Journal, November, 1914. Another contribution by the same authors appeared in the Journal of the American Medical Association, February 13, 1915, entitled "Pyorrhea Dentalis and Alveolaris—Specific Cause and Treatment."

Dosage in Pyorrhea Alveolaris.—Microbic invasion of the tissues of the mouth is now considered the determining etiological factor. The microbes associated with pyorrhea alveolaris are of two kinds, namely, protozoa and bacteria. Bacterial infection as an etiological factor has been recognized for a number of years. It is only within the last year that the part played by the protozoa has attained importance in the etiology of the disease. To Barrett, Smith, Bass, Johns and their co-workers, we are indebted for our present knowledge concerning endameba buccalis as a causative factor in producing Riggs' disease.

In the treatment of pyorrhea alveolaris the objects are, first, to destroy the infecting micro-organisms; second, to get rid of the pockets of infection existing between the gums and the teeth; third, to prevent re-infection; fourth, to restore the tissues to a normal condition as far as possible; fifth, to meet the indications arising from systemic infection, for it is now known that an infected mouth may infect the system, and systemic infection predisposes to lowered tissue resistance and a continuance of the local condition.

This paper only deals with the use of ipecac (and its alkaloid, emetine) which, properly employed as an amebicide, is capable of killing out the ameba buccalis.

* Paper entitled "The Protozoa of the Mouth in Relation to Pyorrhea Alveolaris," read before the Pennsylvania State Dental Society, Philadelphia, July 1, 1914, and afterward published in the Dental Cosmos for August, same year.

The employment of operative procedures is also essential to the cure of Riggs' disease, and the use of bacterin treatment may also be necessary.

Emetine hydrochloride may be used locally or systemically in the treatment of pyorrhea alveolaris. Barrett recommends its employment locally in one-half of one percent solution. Stronger solutions are apt to provoke inflammatory reactions in the gums. Care should also be taken to use a neutral salt, as free hydrochloric acid is liable to irritate the gums and adjacent surfaces. The solution should also be isotonic with the blood for it may prove irritating if used in stronger or weaker solutions.

The solution is introduced into the pyorrhea pockets by means of a hypodermic syringe, preferably with a curved, blunt-pointed, needle. Treatments which include all recognizable pus pockets, and especially parts under suspicion, should be repeated daily for at least five days, and thereafter every other day, until about ten treatments as a total have been made. Microscopic examination of scrapings from the pockets should be made from time to time for persisting endamebæ as the treatment progresses, and this, together with the general appearance of the lesions, will determine the appropriate duration of treatment. In some of the less marked and less chronic cases, a total of five or six applications or even less may be sufficient, while in the more stubborn instances, treatment may be continued even longer.

Barrett further states that coincident with the disappearance of the endamebæ, the soreness, pain or discomfort, and the amount of pus formed, rapidly decreases. The tendency to bleed from slight trauma usually ceases within forty-eight hours, and in almost all cases the patient recognizes and feels confident of the beneficial effects within a few days.

Bass and Johns find that the endamebæ may be destroyed in cases of pyorrhea alveolaris by the subcutaneous injection of emetine hydrochloride. According to these investigators the endamebæ disappeared from the lesions following from one to three days of hypodermic treatment in more than 90 percent of all cases. Injections of one-half grain up to three grains were sufficient. All cases should be treated at least three days and none need more than six. Usually one-half a grain daily for three to six days, depending upon the case and the stage of the disease, is all that is required to accomplish the purpose.

To Prevent Re-Infection.—Barrett says with truth that every unhealed lesion must be regarded as a source of re-infection which will certainly promptly occur just as long as endamebæ are being constantly thrown off from the pockets of infection. Therefore these pockets of infection should be healed and permanently abolished, first by proper operative procedures; including scaling off the tartar from the teeth (which can be greatly facilitated by the use of bifluoride of ammonium solution as recommended by Dr. Joseph Head, of Philadelphia); and, second, by the employment of emetine hydrochloride and ipecac. Bass first recommended rinsing the mouth thoroughly with a solution of fluidextract of ipecac—two or three drops to a half tumbler of water—which he believes protects against reinfection. Later he recommended the use of emetine hydrochlor-

ide dissolve in alcohol.—strength 1 to 10—one drop of which should be applied to a wet tooth brush, and used for brushing the teeth every night before retiring.

A valuable mouth wash containing ipecac to be used as a preventive of reinfection and as a cure for pyorrhea alveolaris in mild cases, to meet the suggestion of Bass may be prepared by combining the following:

Fluidextract Ipecac	8 min.
Zinc Chloride	2 gr.
Beta-naphthol	½ gr.
Solution Formaldehyde (40%)	⅓ min.
Menthol	⅛ gr.
Oil Gaultheria, q. s.	
Alcohol, 55 percent, q. s. to make one fluid ounce.	

Directions: Cleanse the teeth and gums with the solution undiluted, using a soft tooth brush. As a mouth wash, add 20 drops to about two tablespoonfuls of water.

IV. EMETINE HYDROCHLORIDE AS AN HEMOSTATIC.

C. Flandin,[1] impressed by the prompt disappearance of blood from the stools in cases of amebic dysentery treated by hypodermic injection of emetine hydrochloride investigated its action as an hemostatic in hemorrhage from the lungs. He applied the remedy by the same technic as for dysentery, injecting into the thigh 1 cc. of distilled water containing 0.04 mg. (about 5/8 gr.) of the salt. The result of the injection was surprising, the hemorrhage stopping immediately.

In about twenty cases in which this treatment was used, the hemotysis was regularly arrested, even where copious hemorrhage had been taking place but a short time before. With the exception of one case of galloping tuberculosis, the tendency to pulmonary hemorrhage seemed definitely arrested. However, in the more threatening cases he repeated the injection twelve hours later and once on the following day, and if necessary on the fourth and fifth days.

The injection causes temporary pain only in the most sensitive individuals. No disagreeable sensation was experienced, no palpitation, dizziness or nausea. In some cases there was no longer a trace of blood in the sputum, but occasionally blackish stools were present and persisted for a time.

Why does emetine arrest pulmonary hemorrhage? The reason is obscure. H. C. Wood, Jr.,[2] says: "The alkaloids of ipecac seem to have some peculiar predilection for the lungs. A number of investigators have observed areas of pallor and of intense hyperemia in the pulmonary tissue."

The effect was not due to a lowering of blood pressure, for the author's sphygmomanometric measurements showed the pressure to remain the same; nor could he detect any effect on the coagulability of the blood or the number of red cells, leucocytes, and platelets. The measure seems to be entirely harmless and has succeeded when all others have failed. In but a single case was permanent arrest of hemoptisis not obtained with emetine.

Can Emetine Hydrochloride Be Used by Mouth?—As the hypodermic method is not always convenient in practice, Rogers has tried giving one-third of a grain of emetine hydrochloride in tablets by mouth on an empty stomach, and finds that two-thirds of a grain can generally be taken without producing any material

[1] Presse Medicale, September 24, p. 777, Jour. A. M. A., November 1, 1913.

[2] Pharmacology and Therapeutics. By H. C. Wood, Jr., M. D., J. B. Lippincott Company, London and Philadelphia, 1912.

sickness and with much more favorable results than with ipecac by the mouth. However, the action is slower and less effective than by the hypodermic method, and in one patient blood and mucus reappeared in the stools after three days absence, although he had taken a total of two grains by the mouth; but all symptoms finally vanished after two more days of hypodermic medication.

Tablets of ipecac and of emetine are now used by mouth in the treatment of pyorrhea alveolaris. Bass and Johns recommend a tablet of ipecac, each representing 10 grains of the powdered drug. "One tablet three times a day does not destroy the endamebas in the mouth in many cases in a week or ten days. Two tablets three times a day destroys all demonstrable endamebas in six days or less in practically all cases. Three tablets three times a day destroy all demonstrable endamebas in from four to six days." The authors say that this tablet does not cause nausea, but there is frequently more or less abdominal discomfort and also some looseness of the bowels. However, members of the West Virginia Dental Society reported to me their experience and stated that nausea is sometimes produced by the tablets and their use must under such circumstances be dropped until the symptom disappears. Bass says that he would expect to find an individual occasionally who could not take the tablet satisfactorily and also those who would not absorb enough of the drug to destroy the endamebas on account of the diarrhea produced carrying it through the intestinal canal too rapidly.

CAN EMETINE HYDROCHLORIDE BE SAFELY INJECTED INTRAVENOUSLY?

Rogers has found that emetine hydrochloride can be safely injected intravenously in considerable doses. In one severe case of amebic dysentery he gave first, half a grain of the drug dissolved in 5 cc. of normal saline, injected very slowly into the median basilic vein, without the slightest depressing effect on the pulse, while the same evening he gave two-thirds of a grain and a day later, a one-grain dose in the same way, in addition to several subcutaneous ones. The favorable results in this case,—an extremely severe one—justifies him in advising the intravenous method in such acute attacks of amebic disease.

DO EMETINE INJECTIONS KILL ALL THE AMEBÆ AND PREVENT RELAPSES?

This question is discussed quite at length in Rogers' papers, and while, in his opinion, it is still too early to give a final answer, yet some important evidence regarding it has been accumulated, sufficient in amount to justify him in believing that this method of treatment can completely sterilize the whole of the tissues of the body as far as pathogenic amebæ are concerned, and afford good ground for hoping that at last a simple drug has been found which will absolutely rid the human system of a deadly protozoal parasite.

PROFIT AND PROFESSIONAL ADVANTAGES OF PHARMACEUTICAL MANUFACTURING BY THE RETAIL PHARMACIST.*

F. W. NITARDY.



While most of us have a natural leaning toward one or the other side of pharmacy, professional or commercial, and may find it pleasant to contemplate the practice of pharmacy in accordance with our own pet notions or ideas, there are few of us who can afford to indulge in a one-sided business just for the pleasure we may derive therefrom. We owe a duty to ourselves and our families which requires us to practice pharmacy in a manner so its pursuit will yield the profits necessary to maintain our standing in the community equal to at least that of the moderately prosperous merchant or professional man.

Pharmacy, by its development, environment and demand of the public has become a vocation that intimately combines profession and business, and it is only by the harmonious and simultaneous practice of both that we may hope to obtain the full measure of success fortune has in store for those who serve well in their chosen capacity. So closely associated are business and profession in pharmacy that it is hard to draw a line between them or neglect one without injury to the other.

Many influences have been at work in later years which have had a tendency to reduce our professional scope or activity. Our investments have been increased and our returns decreased. Expense and cost of living have been on the advance. It behooves us therefore to take good care lest we allow foreign interests to make further inroads on our calling. Not only that, but it is pertinent for us to put forth every effort and use all legitimate means to increase our field of usefulness and service as pharmacists. For, by such means only, can we successfully hold our own under the ever-growing difficulties confronting us.

Pharmaceutical manufacturing by the retailer is a field of his rightful activity embodying commercial and professional pharmacy in a manner which makes it of peculiar value to the present day druggist. It offers great opportunities and advantages: commercially, in the profit to be derived therefrom; professionally, in its elevating influence in causing the pharmacist to practice real pharmacy and exercise his skill. It is a most healthful stimulant to our business. It opens the door to greater prosperity and higher professional standing and respect. Its possibilities are far greater than any one, who has not investigated them, can realize. To some it may seem a matter of little moment.

That manufacturing, an important side of our business, should have been neglected to the extent it has, seems astonishing but if we just remember how

* From an address before Nebraska Pharmaceutical Association.

easy it is for humans to be enticed into habits that relieve us of work, even though we suffer a loss of profit and prestige by yielding to this instinct, we can readily understand how we unsuspectingly, along with the doctor, fell victims to the manufacturers' exploits and arguments professing to save us money, trouble, labor and what not. Even now, we hardly realize what has been one of the fundamental causes of some of the distressing conditions that confront pharmacy. But the object of this paper is not to discuss the causes or events that brought about present conditions, but to offer some tangible proofs that we can help ourselves to greater prosperity by doing such pharmaceutical manufacturing as can conveniently be done by the retail pharmacist. I shall endeavor to show just what manufacturing means to the pharmacist by touching briefly on the various steps, considerations and equipment involved in the successful pursuit of this work, and showing the profit as well as professional advantages to be derived therefrom.

If I succeed in interesting you to the extent of investigating the possibilities of this field of pharmaceutical industry, or cause you to leave this convention determined to increase your activity along this line and put behind it the energy and enthusiasm it deserves, I shall feel that I have been more than repaid for my effort to serve you.

THE MANUFACTURE OF OFFICIAL PREPARATIONS.

That we possess a copy of the latest edition of the United States Pharmacopœia and National Formulary is of course essential in this work. Let us consider the formulas of these works for a moment. They have been subject to much criticism, but let me tell you the greater part of it is unjustified; while there are some formulas that are not entirely satisfactory, their number is small and the trouble they offer is easily overcome. Most of the criticism has been caused by the use of improper material. All our skill is useless when we try to make fine products from poor goods; not only will the final preparation be lacking in quality but frequently we encounter all manner of unlooked-for trouble. Here are two samples of simple syrup, one made from granulated sugar and the other from Confectioners A. The latter, clean and clear, free from ultramarine blue or other coloring matter, the former is dirty, turbid and looks yellowish as soon as the blue coloring has settled out. Granulated sugar is a commercial grade—good enough for household purposes but hardly fit for pharmaceutical use. The other, because it is a highly refined article, is free from coloring or impurities. A syrup made with a cheap granulated sugar is not only difficult to clarify by filtration or otherwise (pharmaceutical syrups should be clear and brilliant whenever possible), but the ultramarine blue so frequently present in the cheaper sugars will give rise to H_2S on decomposition. This is especially apt to happen in syrups containing free acids.

Similar illustrations of differences in quality could be made by producing preparations with commercial and official alcohol, commercial and pure chemicals, oils, etc., respectively.

We must buy good, yes, the best of materials for our manufacturing department. We must buy from reliable sources, more than that, we must be able to detect bad material and watch incoming goods closely enough to see that we get what we order. At present, we can feel fairly certain that goods are true to

label but it is a good practice to occasionally apply the official tests. Especially if we have reasons to doubt the quality of a given article. We should have the equipment and ability to satisfy ourselves as to their actual worth. The apparatus required for the simple pharmaceutical testing means but a very small investment, a few dollars will cover it and the value of the practice you or your employes get in applying these tests cannot be under-estimated. It gives you a feeling of security and when jobbers and manufacturers know that you can and will occasionally check the quality of goods received, they will exercise much greater care in seeing that you are supplied with goods meeting requirements. It is rather unpleasant for them to be caught in supplying goods that are not up to standard or in conformity with the label. Furthermore, this sort of work in your store will create respect for you, both with the laity and medical profession, for they will see that you have ability beyond that of a merchant.

Let me mention a few incidents illustrating the value of such work. I had been buying oil of turpentine from the same source for a long time. It came labeled as U. S. P. Oil of Turpentine and I had verified its quality by the usual tests. One day I received a notice from the Health Department to discontinue the sale of this commodity as they had found it adulterated. I immediately tested my stock and found that it was all right, so I wrote a courteous letter to the Health Department, stating that I had received their notice but that they were evidently in error as the turpentine I was selling was strictly U. S. P. A day later I met the State Chemist, who told me that he had examined many samples of Oil of Turpentine lately, and found none that were pure. He mentioned that he had relied entirely on the Sulphuric Acid Test of the U. S. P. I could see wherein he made his error as this test is faulty or may at least be misinterpreted by not being given in sufficient detail. I did not say much, but collected data from reliable authorities, principally from phamphlets published by the Department of Agriculture, showing wherein the test was deficient and then called his attention to this information. Shortly after an apology was offered, for the officials realized that they were mistaken.

Another incident was in regard to hydrogen peroxide. I had been buying from one firm but occasionally found their product below strength, and after several complaints discontinued my purchases. They then investigated the matter more thoroughly and were very much surprised to find that the fault lay with their chemist who was very careless in testing the product. The firm in question were manufacturers.

The necessity of watching the labels was brought to my attention when on ordering a pound of U. S. P. hypophosphorous acid I received the product of a very well known, and generally considered reliable manufacturing house, labeled "Hypophosphorous Acid," and in small type in one corner of the label appeared the note: "If this acid is neutralized with ammonia water, a turbid mixture will result which on filtration will yield a precipitate with Barium Chloride Test Solution." The U. S. P. requires that hypophosphorous acid shall do neither, but unless one is familiar with the tests for purity of this article, such statement on the label might easily be overlooked and hence also the fact that the product was not suitable for pharmaceutical use.

To get back to where I left off. Next in importance to buying good goods

and seeing that they comply with official requirements, is the process of production. Herein we should adhere strictly to the official formula unless the latter will under no circumstance produce a satisfactory product. This is necessary for several reasons. In our own opinion we may be able to improve on the official process, but others who are just as capable and qualified to pass judgment on these matters as we, may not agree with us. Uniformity is one of the most important points and uniformity in official preparations is out of the question unless everybody prepares them in accordance with official standards. As an illustration let me mention tincture of nux vomica. The official process calls for making this preparation by dissolving 20 grams extract of nux vomica in sufficient alcohol and water to make 1000 cc. of tincture. This makes a rich brown colored liquid. I know that some pharmacists make this preparation by diluting a fluidextract with sufficient menstruum. By this method a straw-colored liquid is obtained which further differs from the official tincture in containing a small amount of acetic acid introduced by the fluidextract.

A point frequently overlooked is the attention that should be given to the storage of our preparations, for it is quite important to protect sensitive products from the detrimental influences of light, air and temperature. Many excellent preparations have been spoiled or damaged by improper care in storage. When the Pharmacopœia states that a preparation, as for instance, spirit of nitrous ether, should be kept in *small, well-corked amber bottles* in a *cool place,* there is a goo reason for keeping it this way. It deteriorates rapidly unless so kept. There is little difference between the pharmacist who prepares a substandard product and the one who permits a good product to become substandard through carelessness. In either case when such a product is dispensed, an injury is done to the patient, physician and pharmacy at large.

To be equipped to make the various preparations does not require a large outlay for apparatus. You need a number of percolators; some graduated receiving jars, these may be home-made, from candy jars or wide-mouth bottles; some porcelain evaporating dishes; flasks and funnels. Your prescription graduates and mortars will also serve in your manufacturing department. You should have a set of metric weights so as to save converting your formula into the apothecaries system and when once used you will find it the most convenient by far. Retort stands and steel rods fastened to shelves in your back room are very convenient to hang funnels and percolators. A filtering rack with adjustable shelves is desirable if space is available. Further necessities are thermometers; oven, water bath; tin, glass or rubber covers for funnels; scales beakers, spatulas, glass rods, etc. Earthenware crocks are quite handy as mixing vessels. Old glass stoppers will serve for percolator weights. In fact many little ideas will suggest themselves to you in carrying on the work that will save time, material and apparatus.

In making your preparations it is very desirable to have printed blanks, to be used for writing out your formula. Such a system prevents errors, saves your books and gives you a permanent record. All notes and other information, such as the amount of menstruum used in a percolation operation, notes on how troublesome points may be overcome, etc., should be made on the back of these blanks for future reference. These blanks should be numbered and filed like

COST CHART.

Preparation	Quantity	Cost				Equivalent to	[2] Manufacturers' Charge			Saving	
		Materials	Time	Overhead	Total		A	B	C		
Aromatic Elixir, U. S. P.	1000 cc.	.30	.25	.05	.60	.29 pt.	.45 pt.	.42 pt.	.36 pt.	.07	.16 pt.
Aromatic Elixir, U. S. P.	4000 cc.	1.14	.25	.14	1.53	1.47 gal.	2.47 gal.	2.40 gal.	2.40 gal.	.93–	1.00 gal.
[1]Aromatic Elixir, U. S. P.	20000 cc.	5.07	.35	.54	5.96	1.09 gal.					
Elixir Cinchona, N. F.	4000 cc.	1.49	.35	.18	2.02	1.91 gal.	3.15 gal.	2.55 gal.	2.40 gal.	.49	1.24 gal.
Elixir Terpin Hyd., N. F.	4000 cc.	2.39	.35	.27	3.01	2.85 gal.	5.17 gal.	4.80 gal.	3.60 gal.	.75	2.32 gal.
Camphor Liniment, U. S. P.	4000 gm.	1.54	.25	.18	1.97	.23 pt.	.72 pt.	.50 pt.	.50 pt.	.27	.49 pt.
Soap Liniment, U. S. P.	4000 cc.	2.64	.50	.31	3.45	.41 pt.		.60 pt.	.50 pt.	.09	.19 pt.
Comp. Glycyrhiza Mixt., U. S. P.	4000 cc.	.95	.50	.15	1.60	1.51 gal.	2.70 gal.		.60 pt.	1.19	3.29 gal.
Syrup of Hydriodic Acid, U. S. P.	1000 gm. (850 cc.)	.39	.10	.05	.54	.32 pt.	.54 pt.	.48 pt.	.45 pt.	.13	.24 pt.
Syrup of Ferrous Iodide, U. S. P.	1000 gm.	.58	.50	.11	1.19	.53 lb.	.63 lb.	.55 lb.	.55 lb.	.02	.10 lb.
Comp. Syrup of Phosphates, N. F.	4000 cc.	2.48	.50	.30	3.28	3.10 gal.	5.17 gal.			2.07	gal.
Tincture of Capsicum, U. S. P.	1000 cc.	.79	.25	.10	1.14	.54 pt.	.86 pt.	.93 pt.	.72 pt.	.18	.32 pt.
Tincture of Nux Vomica, U. S. P.	1000 cc.	.73	.15	.09	.97	.46 pt.	.81 pt.	.72 pt.	.60 pt.	.14	.35 pt.
Comp. Tinct. of Gentian, U. S. P.	4000 cc.	2.15	.50	.26	2.91	2.75 gal.	.65 pt.	4.00 gal.	.51 pt.	1.25	2.45 gal.
[4]Comp. Resorcin Ointment, N. F.	1000 gm.	.75	.50	.12	1.37	.62 lb.	1.08 lb.	1.25 lb.	1.50 lb.	.46	lb.
Sulphur Ointment, U. S. P.	500 gm.	.21	.15	.04	.40	.36 lb.	.86 lb.		.60 lb.	.21	.50 lb.
		23.60	5.45	2.89	31.94		58.88	54.71	55.46	24.41	
		74%	17%	9%	100%		[4] Average, $56.35.				
			57%					100%		43%	

[1] Three quantities are given to show difference in cost in varying quantities.

[2] Manufacturers' charges: A represents one class of manufacturers, B another class, and C a manufacturing jobber. Wherever possible price for bulk quantities corresponding to manufactured amount are mentioned. In a few instances the preparations were not listed by some class of manufacturers.

[3] Price of B and C are for preparations of similar nature, but not in compliance with official formula.

[4] In arriving at the totals, quantities equivalent to the manufactured amount were figured and in case the preparation was not listed, the lowest competitive figure was used as a basis.

you do prescriptions. Such records will prove of much value. They should show, aside from the formula and directions, the cost of material, the time required to make the preparation, date and by whom made. If a card index is kept with a card for each preparation made, showing date, serial number of formula record, quantity made, cost of material, time, overhead and total cost, you will have all the information you may want in regard to any of your preparations. On a moment's notice, you will know just how much of each product you are using and what it costs you. Such a record system may seem complicated on first thought, but it takes very little time to keep it up.

I have prepared a chart showing what it costs to manufacture a few of the commonly used official preparations, using several classes and basing this cost on the cost of material, fifty cents an hour for the time required to produce the product and a further charge for overhead expense at 10 percent of the total. This chart also shows the prices charged by manufacturers for these same products, when bought in similar quantities. In all instances you will note there is a saving. Similar showing can be made on almost any preparation that can conveniently be produced in a drug store. The saving of money, however, is not the whole story. By making these preparations yourself, you can gain advantages worth more than the money you make. You gain arguments and talking points, with which to back up your prescription service and propaganda work, that would not exist for you otherwise. You will have a broader knowledge of and greater confidence in these preparations, factors that will prove a valuable asset. Your preparations will be better than those you can buy and the fact that you produce them, instills respect and gives you professional standing with the public and the medical men.

There are still other advantages worth considering, such as your increased buying power of crude materials used in manufacturing, which you would carry in more limited quantities in case you did not engage in this work.

For many pharmacists the cost of time and overhead expense included in the costs on the chart we shall now consider, is profit, for their pay roll and general expenses would not be decreased by refraining from making their own preparations, for the time devoted to this work would frequently be wasted, and rent, light, taxes, etc., would remain the same.

COST CHART.

You will note that on the preparations mentioned on the chart your investment in making them yourself would be $23.60, as compared with an average of $56.35 in case you buy them ready made. By paying yourself $5.45 for time and $2.89 for general overhead expense, you have a total of $31.94, representing but 57 percent of the cost of the same materials bought from the manufacturers, while your cash investment is but 42 percent of the same. In other words, not considering the above mentioned advantages of manufacturing, and figuring your time and overhead expense into the cost of your preparations, you still make a profit of $24.41 on a total cost of $31.94. What other department in your store can make such a showing?

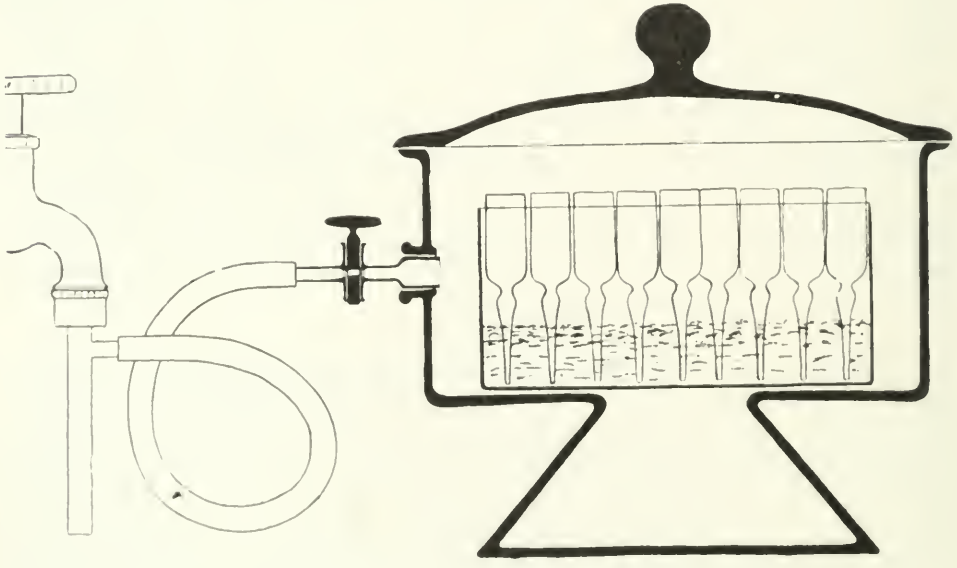
SPECIAL WORK FOR THE PHYSICIAN.

Hand in hand with the production of official preparations goes the special work you can do, such as the making of culture tubes, microscopic stains, test and

volumetric solutions for the modern physician who takes advantage of bacteriology and physiological chemistry as an aid to diagnosis, yes, practically relies on them. He needs various reagents for testing stomach contents, body secretions, etc., the preparation of which can be made a source of profit for the pharmacist. Physicians appreciate such service greatly. The opportunity along this line depends, of course, entirely on the kind of physicians in your vicinity. Practically all of the younger men value such service and many of them who are not using this class of preparations now, would avail themselves of this service if they knew it was obtainable.

The Pharmacopœia and reference works on pharmacy, chemistry and bacteriology give you formulas and information on this work. With the application of a little thought and energy, a profitable business along these lines can be created in many communities.

Another line of very profitable work for the pharmacist is the preparation of sterile solutions, intended for hypodermic and intravenous use. Direct medication is daily growing in favor with the medical profession and to make the introduction of medicinal substances into the blood or tissues of the body safe and free from unpleasant after affects, it is very necessary to have these products sterile. Sterile solutions in individual doses, dispensed in ampoules, have a decided advantage over the old hypodermic tablet and the modern physicians are rapidly becoming familiar with this fact. Empty ampoules may be bought quite cheaply and are easily filled, if you will equip yourself for this class of work.



Vacuum Apparatus for Filling Ampoules.

I have made a drawing, showing an inexpensive and very efficient vacuum apparatus, which I will explain herewith. Ampoules usually come with long sealed necks, clean on the inside. They are first washed outside, then the necks are cut to a uniform length and the so prepared ampoules are then placed right

side up in a flat bottom glass dish. A slightly smaller dish is inverted over them and then by inverting the whole, the ampoules will stand, necks down in the second dish. The amount of solution required to fill the number of ampoules contained in the dish is then placed in same and the whole placed in a vacuum desiccator. The air is exhausted, and then slowly allowed to enter the apparatus again. In this way the ampoules will draw up the entire amount of liquid. The dish is taken out of the desiccator inverted and the ampoules are now ready for sealing and sterilizing. In most cases it is desirable to place the unsealed ampoules in a sterilizer for a few minutes previous to sealing. The condensation of a small amount of steam in the necks of the ampoules will wash them and consequently prevent the charring of the substance, which would otherwise adhere to the necks. If they are sealed warm, there is also less danger of breakage in sterilization by heat, especially if they are sterilized by boiling in water.

Sterilization may be accomplished either by placing the filled and sealed ampoules in a dish of preferably colored water and boiling them for twenty to thirty minutes or by sterilizing them in an auto-clave, with steam under pressure. The latter has the advantage of creating as much pressure around the outside of the ampoule as is formed in the ampoule, thereby preventing unequal pressure which usually causes some breakage.

Some products of course will not admit of sterilization by heat, and in such instances the solutions may be filtered through a germ-proof filter and then filled into previously sterilized ampoules under aseptic conditions.

Ampoules of course are not the only safe container for sterile solutions. When large quantities of bulk solutions are dispensed, glass stoppered bottles are frequently preferable. Rubber caps such as are used by manufacturers of vaccines, form a convenient seal for a bottle of sterile solution intended to be used a little at a time. These rubber caps permit the physician to withdraw a portion of the sterile fluid with a hypodermic syringe by puncturing the rubber cap with the needle. After withdrawing the needle, this puncture closes itself, the solution remaining sterile as long as care is taken in using a sterile syringe and needle for withdrawing the solution.

You can achieve a good reputation amongst your medical friends by specializing on the production of certain preparations in a manner that will provide them with products of higher quality than those ordinarily supplied.

As an illustration I will mention ointment of yellow mercuric oxide. This preparation as ordinarily made is produced by triturating a dry mercuric oxide with an equal quantity of water and incorporating with this mixture lanolin and petrolatum or some other ointment base if desired. As you know, ointment of yellow mercuric oxide is used almost exclusively as an eye remedy. For that reason freedom from grittiness is of great importance and the finer the division of the oxide, the better the ointment you dispense.

A preparation that is far superior to one that can be produced from dry oxide can be made by precipitating the mercuric oxide from dilute solutions, washing, collecting and preparing the ointment from the moist precipitate. The preparation made in this way will contain particles of mercuric oxide so small that they are invisible when examined under a high power microscope.

It would of course be useless to prepare a very fine ointment and then dis-

pense it in a container that would subject it to contamination with dirt and dust as would be the case, if dispensed in an ordinary ointment jar. For that reason it is desirable to dispense an ointment of this kind, in a collapsible tube which is an absolute safe-guard against foreign substances accidentally becoming mixed with it. These tubes of course should be coated with a tolu varnish or other suitable medium that will prevent contact of the mercury salt and the metal.

Doctors who do their own dispensing should not be looked upon as competitors, although it is true they are in a sense, but their good will and friendship should be cultivated, as they require drugs and pharmaceutical preparations, with which you can furnish them if you will make an effort to get this business. While it may not net you the profit that you could derive if they were prescribing instead of dispensing and you could fill their prescriptions, you will nevertheless find that their business is worth while, if you can handle it on the proper basis. Aside from the dispensing physicians there are dentists, veterinary surgeons, beauty doctors and possibly others for whom you can produce various preparations profitably.

The larger your output of pharmaceutical products the greater will be the profit on the manufacturing end of your business.

THE MANUFACTURE OF TOILET GOODS, ETC.

Just as profitable, instructive and ethical as the manufacture of official preparations, etc., is the manufacture of toilet goods, simple household remedies, flavoring essences, food colors and other pure food products, as well as household utilities, such as cleaning fluids, furniture polish, insect destroyers, etc.

Formulas for this class of products may be found in the various formularies and reference books, as well as in the monthly trade journals, of which there are many excellent ones.

While speaking of reference books, I believe the average pharmacist does not make sufficient use of or use a sufficient assortment of such works. Every pharmacist can well afford to invest fifty to one hundred dollars in general works on pharmacy, formularies, reference works on chemistry, botany, bacteriology, aside from subscriptions for journals and Association dues, all of which are necessary means to keep one in touch with the constant progress. You will find it true almost without exception that successful men are well posted on all phases of their business and you will find that their greatest aid in keeping posted is their connection with national, state and local associations, the personal contact with men of affairs in their line afforded by such gatherings as these and the journals and reference works that do not serve as ornaments, but are read and consulted at every opportunity. In cities where local associations exist with a considerable membership, a great service is rendered if such organizations own a pharmaceutical library. In this connection I would like to say that such a library was started by the Denver Branch of the American Pharmaceutical Association in Denver a little over a year ago and we now have a reference library of approximately five hundred volumes covering practically every phase of pharmacy from merchandising and window decorating to works on bacteriology. This library was established without a great deal of expense and is proving a great help to the druggists of our city.

To resume, you will probably find that most of the formulas in the form they are published will not produce preparations entirely to your liking. We usually have our own ideas as to what this or that preparation should be and different classes of products are demanded in different localities. For that reason a little experimental work is usually necessary to perfect the preparations. Before such work is attempted, however, all reference books at your command should be consulted, and every formula for preparations of the nature or class you are trying to produce should be studied. The various hints and formulas that you will find will be of great help to you and offer many suggestions which with your practical knowledge of pharmacy will make the work of producing a satisfactory preparation, comparatively easy.

Whenever possible try to be original in your preparations. That is, your product should not suggest itself as an imitation of something already known. It should at least be an improvement over what is on the market. Individuality is always an asset.

As in the manufacture of your pharmaceutical products, it is quite essential to use the best of materials in their production. It is time enough to consider the cost when you have your formula established; you can then adjust your package and retail price so as to give you the proper margin.

With toilet preparations especially, the package is a very important factor and considerable care, thought and judgment should be used in designing it. Here, too, it is desirable to lend your package individuality. Hand lotions, creams, etc., should be well scented. Such toilet preparations as combine cosmetic properties with medicinal value should be prepared so that both points are properly taken care of. A hand lotion should have aside from a pleasant appearance, attractive package and nice odor, the medicinal quality necessary to make it a satisfactory product, so far as curing and preventing chapped skin is concerned. It should also be pleasant to use. That is, it should not be sticky, greasy, or in any other way objectionable. Any one doing or expecting to do prescription business and keep on good terms with the medical profession should not attempt to market cure-alls for every imaginable ailment. Any sensible physician will not object to household remedies such as are called for by the public for minor ailments for which physicians would not be consulted any way. But I believe that it is not within the province of the pharmacist to market dyspepsia or rheumatic cures or any preparation for the treatment of diseases or conditions properly requiring the attention of a physician nor imitate the frequently fraudulent proprietaries on the market.

A certain amount of advertising will be necessary to place your products along these lines before the public. Of printed advertising, I believe circulars or small pamphlets are the most effective. If these are gotten up in original style, are truthful and well distributed, you may be quite certain of results. One should avoid negative assertions in advertising and not be afraid to give proper publicity to all of the good qualities of the product. Of great value are window and counter displays. A great deal in fact can be said on the merchandising end of these lines but this is not within the scope of this paper.

A COLLEGE OF PHARMACY PRESCRIPTION ROOM.

ALBERT H. DEWEY, PH. G., M. S.



Prescription work is probably the most scientific of all the work a pharmacist does in the drug store. In a sense it may be considered the keystone of the arch of pharmaceutical education since many of the other subjects are included in the curriculum to prepare the student for a proper understanding of this subject.

Because of the high character of this work both in college and in the drug store, the equipment of a prescription room in which the student receives his practice in the dispensing of prescritptions is a matter of the first importance. Since, according to my idea, the prescription room at Purdue University satisfactorily fulfills the purposes for which it was designed, a brief description of it might be of interest to the readers of the Journal.

This department occupies a corner room fourteen by eighteen and a half feet, having one east and two south windows. It is heated from an office room below by a register in the floor in order to save the space that would otherwise be occupied by a radiator. Two corner sinks, in opposite corners of the room, afford a means for washing utensils, containers, etc. Distilled water is supplied by siphons from large bottles conveniently located on top of the cases. Hot distilled water is also available, being supplied by a block-tin lined copper tank fitted with a faucet, and heated by an ordinary bunsen burner.

The furniture of the room consists of five prescription cases, one labeling desk,



Prescription Room, Purdue University School of Pharmacy, Lafayette, Ind.

and one Schwartz Sectional cabinet. The prescription cases and labeling desk were manufactured according to blueprints and specifications furnished by the Purdue School of Pharmacy. The prescription cases are of Indiana quarter-sawed oak, nine feet long by twenty-one inches wide, and have plate-glass work-tops inlaid on green felt. Below the work-top of each case are three cupboards for the larger apparatus, closed by roll doors, and a number of drawers for smaller utensils, containers, etc., while above the work-top are three sections of adjustable shelves on which are kept in regular shelf bottles the chemicals, powdered drugs, and liquid preparations of the U. S. Pharmacopœia. The labeling desk is of the same material and construction, six feet long by twenty-one inches wide and of a height convenient for use while standing. This desk has two cupboards closed by roll doors and numerous drawers in which are stored the surplus stock of labels, apparatus, and containers for use in this room.

The sectional cabinet is utilized for small and irregular containers, original bottles of alkaloids, volatile oils, etc., and the proprietaries usually kept in stock.

Each kind of work is performed at a desk especially equipped and fitted for that kind of work only. For example, suppositories are made at the suppository desk which, in addition to the necessary mortars, slabs, spatulas, etc., has a disappearing suppository machine, casseroles for melting suppository masses, rectal, infant, vaginal, and urethral molds, and in fact everything that could possibly be required in the extemporaneous preparation of suppositories. The same is true throughout the room, a specially equipped desk being used for each of the following classes of preparations: Suppositories, elastic capsules, infusions and decoctions, powders, cachets, capsules, collyria and nebula, hypodermics, solutions, mixtures, emulsions, ointments, tablet triturates, troches and pastils and pills.

Each nine-foot desk is designed for the use of two students ordinarily, or three if necessary. Thus it will be seen that fifteen students can be accommodated in this room at one time, surely as great economy of space as is practical in the drug store. In fact, conditions in the drug store have been kept in mind in fitting up this room rather than the ordinary laboratory plan for pharmaceutical or chemical work. Here, if no-where else, "Cleanliness is next to Godliness." The student is assigned to a desk for one day's work only. He finds it in good order and scrupulously clean, and he leaves it as he finds it, the apparatus being checked and inspected after each day's work. This necessitates the work of the course being done progressively instead of simultaneously, and it provides a maximum of equipment at minimum of cost.

The plan of equipping the room and carrying on the work of prescription dispensing is as nearly as possible the plan that would be followed in equipping and operating an exclusive prescription store to work fifteen clerks.

The containers used for the dispensing of the finished prescriptions are the best that can be procured. Hinged lid pill and powder boxes, partitioned boxes lined with tinfoil for suppositories, collapsible tubes as well as opaque glass jars for ointments, glass jars with perforated tops for dusting powders, are typical examples.

It has long been the belief of the writer that prescription work cannot be too

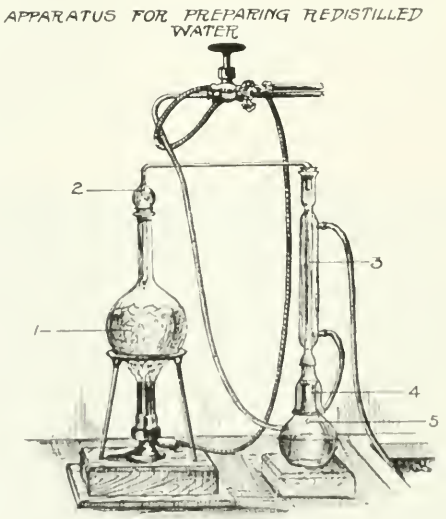
well or too elegantly done and that, in the student's practical work in this subject while in college, too much emphasis cannot be placed upon either the thoroughness of the work or the beauty and elegance of the finished product.

The graduates of colleges of pharmacy should never meet in any drug store better or more elegant dispensing than they have been taught and required to do in college; they should be accustomed to the use of the best materials, utensils, containers, in short the best of everything. They should be masters of the highest class of compounding and dispensing and trained in no other kind, for it is to these college-trained men that pharmacy must look for its ideals and its uplift in the years to come.

REDISTILLED WATER VERSUS STERILIZED DISTILLED WATER.*

WM. GRAY.

Pharmacists should be cautioned against using boiled distilled water as a substitute for redistilled water. Distilled water, as ordinarily handled, not only contains traces of metal and ammonia, but bacteria as well. Boiling such a specimen does not remove any bacteria that may be present, but killing them



produces a suspension of them, which, when administered intravenously, acts like a vaccine. Chills, temperature and other complications often result from using water of this kind. This is neither desirable nor necessary, as the difficulty is easily overcome by redistilling the water in hard glass, such as Jena or Non-Sol. The water should be *aseptically* cared for, and used within an hour

* Read before Chicago Branch, A. Ph. A., May 18, 1915.

after redistilling. For this reason the aqua distillata sterilisata of the next pharmacopœia is open to the same criticism, since unless the freshly distilled water is *collected aseptically,* the subsequent boiling to sterilize it will as likely produce a vaccine as when made from an older distilled water, only in a lesser degree.

Here we have an apparatus that is inexpensive and does the work. Pharmacists should get busy if they want to meet the demands of up-to-date practitioners, who require *freshly distilled* water for preparing or having the pharmacist prepare salvarsan, physiological salt and other solutions for intravenous use.

If one cares to put up ampoules wherein such water is always used as a solvent, I think it will pay to do so—if not directly, then indirectly, in added prestige with physicians who direct their prescriptions towards your establishment. Examples of such ampoules are sodium cacodylate, a substance which has almost superseded Fowler's and Pearson's solutions in chorea and anemia—iron and arsenic are used particularly in pernicious anemia. Emetine hydrochloride in amebic dysentery and pyorrhea has brought wonderful results, and as a consequence, the price of ipecac is soaring. There are too many substances used in ampoule form to mention all—I simply call attention to the above medicaments because the demand for them is increasing.

The technique necessary for this work is to use sterile utensils. Ampoules must be of hard glass, either Jeno or Non-Sol. *Hard glass is very essential,* soft glass being more or less soluble, especially when sodium chloride is used to make the solution isatonic, the powerful sodium and chlorine ions acting on soft glass. Solutions must be neutral. Ampoules may be filled by using a burette with rubber connection with glass tube drawn to a fine point or with a hypodermic syringe. The filled ampoules should be heated to the boiling point before sealing in the flame, so that they may be placed in boiling water for thirty minutes each day, for three successive days.

A METHOD FOR THE DETERMINATION OF CARBON DIOXIDE IN BAKING POWDER AND CARBONATES.*

H. W. BRUBAKER.

The following is the result of an attempt to devise a method for the determination of the available carbon dioxide in baking powders, which is simple in principle, requires an apparatus easy to construct, and manipulate, consumes little time and gives reasonably accurate results. The method was devised for the use of a class of girls in household chemistry. It is adapted not only to the determination of carbon dioxide in baking powder but also in carbonates, bicarbonates and minerals such as limestone and dolomite.

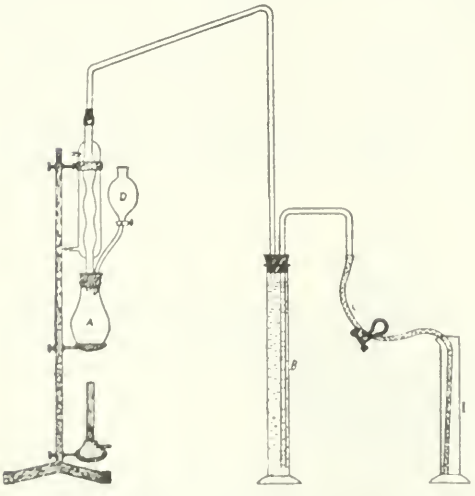
The principle of the method, in brief, is the liberation of the carbon dioxide,

*From Journal of Industrial and Engineering Chemistry, May, 1915.

causing it to displace its own volume of a saturated solution of sodium chloride into a graduated cylinder and measurement of the volume of the solution displaced. A saturated solution of salt is used because carbon dioxide is not readily dissolved in it and tests show that under the conditions of the experiment the amount of absorption is so small that it may be neglected. A saturated solution of salt is also used, instead of water, in the decomposition of the baking powder. The principle of collecting carbon dioxide over a saturated solution of sodium chloride is used by Jago in determining the strength of yeast.

PROCEDURE.

One gram of the baking powder is placed in the flask *A*. Water is circulated through the condenser for several minutes. The cylinder *B* is nearly full and the delivery tube *C* is full, to the open end, of a saturated solution of salt, the pinch clamp being closed. The stopcock in the funnel *D* is now closed and exactly 25 cc. saturated solution of salt placed in the funnel. The pinch clamp on the delivery tube is now opened and the salt solution run in from the funnel by opening the stopcock, care being taken not to admit any air. The carbon dioxide begins to be liberated at once and the salt solution is driven over into the graduated cylinder *E*. The decomposition of the baking powder is completed by heating with the gas burner until the solution has boiled for two or three minutes or until the rise of the salt solution in the cylinder *E* is seen to have stopped. The flame is then turned out and the apparatus allowed to stand until it has cooled to room temperature again. The cooling of the flask *A* can be hastened, if desired, by lowering the ring and bringing a beaker of cold water up under the flask until it is immersed in the water. When the apparatus has reached room temperature the salt solution in *E* and *B* is leveled up by raising *E*. The pinch clamp is then closed; the cylinder *E* is lowered to the table, the delivery tube removed and the volume of salt solution in *E* read. Subtract 25 cc. from this volume to compensate for the 25 cc. of salt solution which were run into the flask *A* to decompose the baking powder. Correct the remaining volume to 0° C. and 760 mm. pressure. As 5.1 cc. of carbon dioxide gas at 0° C. and 760 mm. pressure weigh 0.01 gm., which is one percent of 1.0 gm., the percent of carbon dioxide in the baking powder may be found by dividing the corrected volume by 5.1.



NOTE: In making the correction for aqueous tension I have used that for pure water which is two or three mm. too high in each case. The effect of the small error thus introduced into the results here recorded is to make them too low.

RESULTS.

The purpose of the condenser in the apparatus is to prevent any water from distilling over into the cylinder *B* and thus diluting the salt solution. Table I shows some results obtained with various baking powders:

Table I—Analyses of Baking Powders for CO_2

Sample Baking Powder	Vol. CO_2 cc.	Temp. ° C.	Barometer mm.	Percent CO_2
Royal A 1	65.0	20	740	11.30
2	66.0	20	740	11.47
Royal B 1	66.4	21	742	11.43
Calumet A 1	78.3	22	740	13.47
2	77.9	23	740	13.34
Calumet B 1	82.0	29	745	13.69
K. C. 1	65.0	24	745	11.14
2	64.5	25	745	11.02

In order to ascertain whether an appreciable amount of carbon dioxide is absorbed by the salt solution during a determination, 90 cc. of carbon dioxide were run into the apparatus at 22° C. and 740 mm. and allowed to stand two hours and forty minutes, at the end of which time the volume was 90.3 cc. and the temperature 23° C., the pressure having remained the same. The increase in volume is very close to that which would result from the increased temperature.

In applying this method to the determination of carbon dioxide in carbonates such as sodium carbonate and precipitated calcium carbonate the sample was decomposed by means of a dilute solution of hydrochloric acid which was saturated with sodium chloride. The absorption of carbon dioxide by the acid solution is appreciable and must be allowed for. This is done by decomposing one sample with 10 cc. of the acid solution, then running a second determination, using 15 cc. of acid. The difference in the amounts of carbon dioxide obtained in the two cases being due to the absorption by 5 cc. of acid solution, the proper correction is made on either determination. When decomposing precipitated carbonates with hydrochloric acid no heating is necessary, hence the time consumed in each determination is very short, but two or three minutes being required for the liberation of the carbon dioxide. In running two samples of calcium carbonate in this way, the whole process, including the weighing of the samples, required only ten minutes.

Table II shows some of the results obtained on carbonates. In Determinations 1 and 2 heat was used. In Determination 3 no heat was used. The sample of sodium carbonate used in Determinations 4 and 5 was found to contain 4.46 percent of moisture. The theoretical amount of carbon dioxide in this sample is therefore 39.65 percent. Some of this sodium carbonate was now dried and Determination 6 made upon the dry sample with the result shown. Allowing for the same absorption as in Determination 5, which is 2.97 cc., gives a total volume of 121.17 cc., under the above conditions of temperature and pressure which correspond to 41.38 percent of carbon dioxide.

Determination 7 was made on a sample of limestone. It was necessary to use heat to completely decompose the sample with the acid solution. I had no gravimetric determination of carbon dioxide in this limestone against which to check the result. However, according to the figures of another analyst, the limestone contains 12.28 percent SiO_2, 1.15 percent $Al_2O_3+Fe_2O_3$, 46.74 percent

CaO and 1.38 percent MgO, making a total of 61.55 percent, which leaves for carbon dioxide 38.45 percent. This makes no allowance for potassium and sodium which may be present in very small quantities. The result is undoubtedly a close approximation to the actual percentage of CO_2 present.

Table II—Analysis of Carbonates for CO_2

Detn. No.	Sample	Wt. taken gm.	Decomposed by cc. acid	Vol. CO_2 cc.	Temp. ° C.	Bar. mm.	Percent CO_2 Found	Theoretical
1	$CaCO_3$	¼	5	62.5	23	737	43.98	44.00
		¼	10	61.0	25	737		
2	$CaCO_3$	¼	3	64.0	24	739	43.88	44.00
		¼	8	63.5	25	739		
3	$CaCO_3$	½	8	127.0	25	735	43.98	44.00
		½	13	124.65	25	735		
4	Na_2CO_3	½	7	116.0	25	734	39.95	39.65
		½	12	113.88	25	734		
5	Na_2CO_3	½	7	116.0	25	734	39.95	39.65
		½	12	113.88	25	734		
6	Dry Na_2CO_3	½	7	118.2	24	742	41.38	41.50
7	Limestone	½	10	111.5	25	744	38.18	38.45 (*a*)
		½	15	113.5	28.3	742		

(*a*) By difference; see text.

NOTE: Since sending this paper for publication I have found a convenient way of obviating the necessity of making a correction for the absorption of carbon dioxide in those cases where the sample is decomposed by dilute acids. This makes it unnecessary therefore, to decompose more than one sample of the substance for one determination. The procedure is as follows: Just before making the determination pour 30 or 40 cc. of dilute hydrochloric acid (1 acid : 3 water) on 0.5 gm. of precipitated calcium carbonate. When the effervescence has ceased, and the acid solution has become clear, pipette 10 cc. of this into the bulb of the separatory funnel and proceed with the determination. This method of saturating the acid with carbon dioxide requires but a moment and makes it unnecessary to correct for any absorption whether the sample is decomposed by heating or at room temperature. The following determination will illustrate the accuracy of this method of procedure:

Wt. of limestone taken	0.5 gm.
Volume of salt solution displaced	138.18 cc.
Temperature, 22° C. Barometer	739 mm
Volume corrected to 0° C. and 760 mm	112.3 cc.
Percent CO_2 found	44.03
Theoretical percent CO_2	44.00

DEPARTMENT OF CHEMISTRY, KANSAS STATE AGRICULTURAL COLLEGE, Manhattan.

SCHUESSLER'S TWELVE TISSUE REMEDIES.*

FREDERICK J. WULLING.



Because I have had numerous inquiries of late from pharmacists and physicians concerning the twelve tissue remedies, it occurred to me as quite probable that many pharmacists of the state are not familiar with them and that a brief reference to them would be acceptable. Because these remedies are as a rule not used by the regular allopathic physician they are sometimes ridiculed, and to avoid any error in statement concerning them I will quote very largely from the literature on the subject.

Dr. W. H. Schuessler, of Oldenburg, something over forty years ago, inspired by the discoveries of such able scientists as Virchow and Moleschott, gave the world a new system of medicine founded upon the "scientific laws of cellular pathology." This system is also called the bio-chemic system of medicine. Concerning this bio-chemic theory I find the following explanations:

"The blood and tissues of human beings are composed of water, albumen, sugar, fats and inorganic salts. The relative proportion of the inorganic salts is small, yet the life and vitality of every cell in the human organism is dependent upon the presence of the necessary quantities of these inorganic constituents. This system deals with twelve remedies, which in composition correspond with the inorganic elements found in the human body. These remedies should properly be called the cell salts, but are today generally known as the Schuessler Twelve Tissue Remedies, no doubt as a tribute to their distinguished discoverer. The cell salts are the real energies in the body, the workers, the builders. The water and organic substances are inert matter used by these salts in building the cells of the body. Each salt has a special work to do; each has an affinity for certain organic materials used in building up the human frame. Thus, for instance, chloride of potassium (Kali Mur.) molecules work in fibrin. If a deficiency occurs in this salt a portion of the fibrin not having workers becomes a disturbing element and may be thrown out of the circulation through the nasal passages, lungs, bowels, etc., producing conditions called catarrh, colds, coughs, etc. As soon as a deficiency or unequalization of one or more of these salts occurs, a disturbance arises known as disease, and a symptom is set up in order that the intellect may heed and supply the want. Schuessler says: 'In all diseased conditions a deficiency of one or more of the inorganic elements (tissue salts) exists. Supply these elements and a normal condition will be restored.'

Virchow, the originator of the famous cell theory upon which the tissue remedies are based, Moleschott of Rome, and others were deeply interested in cellular pathology and proclaimed the truth of bio-chemistry, but it remained for Dr. Schuessler to develop their discoveries into a comprehensive and definite system

* Mostly quoted.

of medicine. He was the originator of the twelve tissue remedies, with which curable diseases can be successfully treated."

The twelve remedies are:

Calcarea Fluorid (Calcium Fluoride)
Calcarea Phos. (Calcium Phosphate)
Calcarea Sulph. (Calcium Sulphate)
Ferrum Phos. (Iron Phosphate)
Kali Mur. (Potassium Chloride)
Kali Phos. (Potassium Phosphate)
Kali Sulph. (Potassium Sulphate)
Magnesia Phos. (Magnesium Phosphate)
Natrum Mur. (Sodium Chloride)
Natrum Phos. (Sodium Phosphate)
Natrum Sulph. (Sodium Sulphate)
Silicea (Silicic Acid)

It is said that these twelve remedies work in harmony with the natural laws of physiological chemistry. They cure by supplying through the blood a deficiency existing in abnormal conditions.

"The salts in their crude state are physiologically inert and cannot be absorbed through the minute cell walls of the tissues. Nature works everywhere with infinitely small atoms which can only be perceived by the human eye when presented in masses. An infinitely fine sub-division of the salts is necessary in order to enable the cells to abstract from the blood their affinitive inorganic elements. This sub-division can be accomplished by a scientific trituration process originated by Dr. Schuessler. In this form it is possible to supply through the blood nutriment to every organ by transudation through the capillary walls. The dosage of these remedies is necessarily small, for it must be remembered that the entire quantity of these inorganic salts in the system is proportionately small and a minute deficiency may cause a disturbance."

Those who desire further information are referred to Carey's Bio-Chemistry, published by the Luyties Pharmacy Company, St. Louis, Mo., and to the Homeopathic Pharmacopœia.

At the Detroit meeting of the American Pharmaceutical Association, held in August, 1914, Mr. George M. Beringer, of Camden, N. J., read a paper dealing with homeopathic pharmacy, in which he held that pharmacists generally should know more about homeopathic pharmacy. This is practically the position I have always taken. While the great majority of homeopathic physicians give remedies to their patients free of cost, I know of some who write prescriptions for homeopathic remedies. There are also numerous instances where allopathic and eclectic physicians write prescriptions for homeopathic remedies.

THE PHARMACY OF USEFUL DRUGS.*

M. I. WILBERT.

Soon after the organization of the Council on Pharmacy and Chemistry of the American Medical Association in the early spring of 1905, it became evident that much of the then existing misuse of proprietary remedies was due to the fact that by far the greater number of medical practitioners had received but inadequate instruction regarding the possible uses and limitations of official and other widely used medicines. It was also recognized that with the limited amount of time that could be devoted to materia medica subjects in the already overcrowded curriculum of medical schools, is would be practically impossible to present even a superficial view of the four or five thousand drugs and preparations in every-day use.

As the fundamental object of the Council on Pharmacy and Chemistry is to develop and to foster the intelligent, scientific use of medicinal preparations in the treatment of disease, it became necessary to consider the practicability of bringing about a change in the then existing condition. At the meeting of the American Medical Association in Boston in 1907 the problems involved were discussed and on the recommendation of the Section on Pharmacology and Therapeutics, a subcommittee of the Council was appointed to consider ways and means to bring about more efficient instruction in materia medica subjects. The subcommittee, after due consideration, came to the conclusion that teachers in materia medica subjects in medical schools felt that it was necessary to impart a smattering of information in regard to a large number of medicines and drugs and their preparations because members of State Medical Examining and Licensing Boards were likely to ask questions regarding them. Members of State Medical Examining and Licensing Boards, on the other hand, thought it desirable to ask questions regarding the many thousands of official and non-official drugs and preparations because teachers of materia medica subjects referred to them in their lectures and discussed them in their textbooks. From this conclusion it became evident that if the members of State Medical Examining and Licensing Boards could be induced to restrict their examinations in materia medica subjects to a more limited list of articles more time could be devoted to their study. Conversely, if instruction in materia medica subjects could be restricted to the comprehensive consideration of a reasonably limited number of widely used and thoroughly well established articles the student could be given a thorough grounding in the properties and uses of the several drugs and preparations and this would go far toward eliminating many, if not all, of the then existing abuses.

The acceptation of such a list of useful drugs, it was further thought, might

* Presented at the meeting of the Pennsylvania Pharmaceutical Association, Forest Park, Pa,. June 22-24, 1915.

serve as an added incentive for the development of international standards for purity and strength of widely used medicaments.

The original list was compiled in co-operation with the Council on Medical Education of the American Medical Association and was subsequently submitted to members of the National Confederation of State Medical Examining and Licensing Boards. It was later submitted to teachers of materia medica and therapeutics in medical schools and to members of State Medical Examining and Licensing Boards, and finally, through the columns of the Journal of the American Medical Association, to medical practitioners generally.

The principles guiding the inclusion of articles in the list of useful drugs were primarily based on the continued extensive use of a drug or preparation, on the reports of clinical experiments as reflected in current literature and on the reports of experimental work done in pharmacologic laboratories and in hospitals equipped with proper laboratory facilities.

Recognizing the influence of current medical literature even when evidently of an advertising nature, the Council has included in the list of useful drugs a number of articles not now included in the Pharmacopœia of the United States or to be included in the revision now in press.

In round numbers the present list of useful drugs includes 450 titles, of which 231 may be classed as drugs and chemicals, 173 as preparations, 43 as definitions of forms of drugs, and 13 as cross references.

As suggested above the list is primarily intended to be educational and to reflect as nearly as is practical the best medical practices of the time. The object is not to restrict teaching in medical schools to this list but to make sure that medical students are given a comprehensive and satisfactory training regarding the properties and uses of the several articles and are duly impressed with their shortcomings and limitations.

It is satisfactory to note in this connection that teachers in medical schools generally have evidenced an appreciation of the need for devoting an additional amount of time to the consideration of the more important medicaments and there is now a fair prospect that future graduates in medicine will be given ample instruction to develop an efficient therapeutic aramentarium.

The pharmacy of this list of useful drugs has as yet not received the care and attention that is properly due it. Pharmacists generally do not appear to realize that much, if not all, of the dissatisfaction with established or well-known drugs is due to the fact that as these drugs reach the patient they are frequently not strictly in accord with the requirements of established standards.

The compilation of data from the reports of State Boards of Health and of State Food and Drug Inspectors, as presented in the several volumes of the "Digest of Comments on the Pharmacopœia of the United States and on the National Formulary," clearly shows that fully 50 percent of the more widely used preparations do not comply within reasonable limits with official requirements. The chemist of the Maine Agricultural Experiment Station in a recent comment on this shortcoming, says in part:

"It is rather startling to find that half of the pharmaceutical preparations examined, which are as simple to make as a batch of biscuit, differ more than 10 percent from the standard."

The object of pharmacy is to exercise control over the identity and purity of articles used as medicine and while it is generally admitted that the average pharmacist cannot well be expected to systematically examine all of the thousands of articles carried in stock, there is practically no reason why he should not concentrate his efforts and ability on the limited number of articles included in the list of useful drugs so as to assure physicians and others that the articles included in this list will uniformly comply with the official requirements.

As noted above the list is intended to include only such drugs and preparations as are in general use or are accepted as having well established medicinal value or demonstrated superiority. The list at the present time includes practically all of the preparations of the Pharmacopœia of the United States for which standards and assay processes are included and also includes practically all of the widely used household remedies that are frequently examined and reported on by officials entrusted with the enforcement of food and drug laws and for these reasons alone pharmacists would do well to consider the practicability of devoting additional attention to the systematic examination and control of the several articles.

With the impending revision of the Pharmacopœia and of the National Formulary, the Council is about to revise the list and teachers in medical schools, members of State Medical Examining and Licensing Boards and others are being consulted at the present time in regard to the practicability or desirability of omitting from and adding to the list of useful drugs.

In this connection it should be remembered that the members of the Council fully realize that individually or as a body they are neither omniscient nor infallible. From its very origin the Council has courted the co-operation and assistance of not alone medical men but also pharmacists.

In the revision of the list under discussion it is particularly important that pharmacists should be given an opportunity to record their criticisms and opinions of the list and its objects and to suggest ways and means for inducing pharmacists generally to prepare and to dispense the preparations included in the list in accord with official requirements.

As has been pointed out before we, in this country, are sadly in need of more energetic and more effective control of all drugs and medicines. The only really safe and efficient control involves honesty, knowledge, intelligence and care on the part of the person dispensing the medicine to the consumer so that unless pharmacists as a class can be induced to devote special attention to the systematic examination and control of drugs and preparations widely used in the treatment of disease, the manufacturers of specialities or proprietaries will continue to have a reasonable argument with which to approach the physician. In conclusion it may be stated that pharmacists as a class may well endeavor to secure for themselves and for their craft the recognition and respect that is properly their due for services rendered but it will be practically impossible to do this unless they collectively and individually insist that all members of their craft live up fully to the requirements that may be reasonably made of them.

FULLER'S EARTH; ITS ADSORPTIVE POWER, AND ITS ANTIDOTAL VALUE FOR ALKALOIDS.*

BERNARD FANTUS, M. D.



For several decades fuller's earth (Parsons[1]) has been used extensively for the removal of coloring matter from oils. It owes this use to its capacity for adsorbing basic colors from solutions, which resides in the finest particles of the clay. The union between the basic substance and the earth is believed to be physical, as it can be easily broken up by use of proper solvents.

In 1910, John Uri Lloyd,[2] of Cincinnati, discovered that the addition of fuller's earth to alkaloids greatly diminished or almost abolished their bitter taste and that most alkaloids could be quantitatively removed from solutions by means of it. Further research revealed that this activity resided in the finest particles of the earth, which Lloyd separated by elutriation from the coarser portion and to which the name "Lloyd's reagent" has been applied.

In view of the theoretic interest as well as the practical possibilities inherent in this property of fuller's earth, this research was undertaken to determine, first, the relation of alkaloids to "Lloyd's reagent" and to various other specimens of fuller's earths; and, secondly, to see to what extent the action of various alkaloids may be modified by combination with these earths. Lloyd, Eli Lilly & Co., and various producers of fuller's earth have kindly supplied liberal quantitaties of material, by means of which the following data were obtained.

THE ALKALOID ADSORBING QUALITY OF VARIOUS SPECIMENS OF FULLER'S EARTH.

This was studied by briefly shaking accurately measured quantities of alkaloidal solutions with varying amounts of fuller's earth, filtering and then testing the filtrate for the alkaloid to determine the smallest amount necessary to remove the alkaloid from the solution. The figures given in Tables 1 and 2 show how many parts of fuller's earth had to be used to remove 1 part of alkaloid from solution. There is some difficulty in deciding on the end-point in these determinations, owing to the fact that water dissociates the combination to a slight extent, so that it is almost impossible to get rid of traces of the alkaloids in the filtrate. Therefore the smallest amount of fuller's earth that would remove the alkaloid as thoroughly as a larger amount was the quantity looked for.

In Table 1, the various earths have been arranged in order of their adsorptive power. It must be understood that the figures given in this table are only of relative value. Slight modifications in the technic of the test give quite different results. Nevertheless, when the same technic was applied to each of the differ-

* From the Pharmacologic Laboratory of the College of Medicine of the University of Illinois, through Journal A. M. A.

[1] Parsons, Charles L.: Fuller's Earth, Bull. 71, Mineral Technology, Dept. of the Interior, Bureau of Mines, October, 1913.

[2] Lloyd, John Uri: Lloyd's Reagent—Preliminary Announcement, Jour. Am. Pharm. Assn., May, 1914, iii, No. 5, p. 625.

ent specimens, their relative position in the table was well maintained. It must furthermore be realized that the adsorptive power of fuller's earth from various sources depends, to a certain extent, on the degree and uniformity of fineness of the specimen. Mere sifting raises the value, if a considerable amount of coarse particles be present; so does elutriation. Nevertheless there is a limit to which the adsorptivity of any one specimen may be raised by these means.

TABLE 1.—Adsorptive value and acidity of various specimen's of fuller's earth.*

Specimen	Morphin Sulphate, 0.5% sol.	Quinin Bisulphate, 0.5% sol.	Malachite Green 1%, with 0.25% Morphin	For 100 Gm. Earth Phenolphthalein c.c. of Tenth Normal Sodium Hydroxid	Congored†
Colloidal portion of Lester Clay without drying.†	6.5	9	20	77	Purplish.
Lloyd's Reagent, Eli Lilly & Co.	8	10	80	155	Bluish purple.
General Reduction Co., Dry Branch, Ga.	20	30	60	175	Blue.
Olson Fuller's Earth, Benton, Ark.	26	44	70	20	Red with trace of blue.
Specimen F (source unknown)	28	50	75	215	Bluish purple.
Lester Clay Co.(xx F) Jacksonville, Fla.	36	50	100	25	Reddish purple.
Specimen D (source unknown)	52	74	105	30	Red with trace of blue.
Midway, Fla., Fuller's Earth	70	80	120	40	Bluish red.
Manatee (E x F) Ellenton, Fla.	80	104	115	15	Bluish red.
Atlantic Refining Co. (xxF) Ellenton, Fla.	110	140	130	5	Red with faint tr. of blue.
Specimen E (source unknown)	200	280	160	5	Red with faint tr. of blue.
Pear's Precipitated....	500	400	600	5	Red with faint tr. of blue.
Kaolin	600	600	1,000	0	Red.

* The figures in the first three columns indicate parts by weight of the respective earths required to remove from solution 1 part of the substance named at the head of the column. The figures in the fourth column indicate cc. of tenth normal sodium hydroxide needed to neutralize 100 gm. of fuller'se arth, phenolphthalein being used as indicator. The specimens are arranged in order of adsorptive power. Variations in adsorptive power of different specimens from the same source have been noted.

† Drying would reduce activity somewhat.

It will be noted that "Lloyd's reagent" is considerably more powerful than any one of the specimens of fuller's earth. It will also be seen that the specimens obtained from Ellenton, Fla., are quite deficient in this power. Pear's precipitated fuller's earth, a very fine white powder, is surprisingly inert. The activity of kaolin is practically nil. In view of the fact that the United States Dispensatory as well as the National Dispensatory quote "fuller's earth" as one of the synonyms of kaolin, it seems of importance to point out that there is a marked difference in the adsorptive power of these substances.

Kaolin as well as fuller's earth is considered to be essentially composed of hydrous aluminum silicate; the latter being merely less pure than the former. That this is the case can be readily seen by comparing the composition of kaolin (Watts[3]) with that of fuller's earth (Vaughan[4]) and of Lloyd's reagent (Waldbott[5]).

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	Alkalies	Water
Kaolin	45.40	37.34	1.92	0.44	0.20	0.52	14.0
Fuller's Earth	57.26	18.33	1.87	2.58	1.06		18.4
Lloyd's Reagent	55.30	9.82	14.80	1.58			17.41

It is an interesting question, why such great difference in adsorptive power exists among these substances. The following theories present themselves: First, it might be due to a physical difference, namely, the amount of colloidal material present; secondly, it might be due to difference in reaction; thirdly, it might be due to difference in chemical composition.

[3] Watts, A. S.: Mining and Treatment of Feldspar and Kaolin, Bull. 53, Dept. of the Interior, Bureau of Mines, 1913, p. 37.

[4] Vaughan, T. W.: Fuller's Earth Deposits of Florida and Georgia, Bull. 213, Dept. of the Interior, U. S. Geo. Survey, 1902, p. 393.

[5] Waldbott, Sigmund: Precipitation of Alkaloids by Lloyd's Reagent, Jour. Am. Chem. Soc., June, 1913, p. 837.

THE AMOUNT OF COLLOID IN FULLER'S EARTH.

Ashley[6] believes that the power of adsorbing certain dyes by clay supplies a measure of the amount of colloid present. He selected malachite green as the best dye known for this purpose, as it is wholly non-colloidal. Colloidal dyes, even if as feebly colloidal as methylene blue, introduce complicating factors that vitiate results, as may be seen by comparing the figures for malachite green with those arrived at with methylene blue: of Specimen F 40 times the amount was required, of Specimen D 60 times, of Specimen E 50 times, of Midway, Fla., fuller's earth 60 times—figures the are very near together in spite of great difference in alkaloid adsorbing power of these various specimens. Ashley agitates the clay with the dye solution for an hour, by means of a small ball mill, permits the clay to settle over night, and determines the amount of malachite green adsorbed by comparison with dilutions of a standard solution of malachite green. He found that half an hour's settling gave results that were too erratic, in view of the slow sedimentation of some specimens of fuller's earth. It must be understood that colored colloidal material in suspension makes the solution appear darker, so that it would seem less color was adsorbed, leading to the judgment that that clay is less colloidal, when it would be actually more colloidal than another clay that settled readily. I believe I have hit on a much less troublesome, more rapid and probably as accurate method of estimating the adsorptive power of fuller's earth by means of malachite green. The addition of a small quantity of an alkaloid, for example, morphine, to a fuller's earth suspension produces immediate deflocculation. On the other hand morphine does not readily salt out the malachite green. I therefore used in the determination of the malachite green figures (Tables 1 and 2) a solution of the following composition:

Malachite green	1.0
Morphine sulphate	2.5
Distilled water to	1000

Filter after prolonged agitation.

The amount of fuller's earth needed to remove a certain quantity of malachite green from this solution, expressed in multiples of that quantity, is represented by the figures in Table 1. It will be noted that these figures run quite closely parallel to the figures indicating alkaloid adsorptive power. Other electrolytes, for example, sodium chloride, also produce deflocculation of suspended fuller's earth. However, considerably larger quantities of sodium chloride are needed to produce this result promptly: quantities that are capable of salting out the malachite green, thus interfering with the test.

From Tables 1 and 2 it will be seen that the adsorption of malachite green runs parallel with the adsorption of alkaloids, and is therefore presumably due to the same cause. To use this adsorption as a measure of the amount of colloid present, as is proposed by Ashley, merely rests on the assumption that it is due to colloid. It does not prove that this is the case. Inasmuch as other colloids experimented with, such as colloidal aluminum hydroxide, colloidal ferric hydroxide, colloidal silicic acid, mastic emulsion, do not have the power of adsorbing alkaloids to nearly the same degree as active fuller's earth, it is reasonable

[6] Ashley, Harrison Everett: The Colloidal Matter of Clay and Its Measurement, Bull. 388, U. S. Geol. Survey, 1909.

to assume that we have here a case of specific adsorption; and that, while no doubt the colloidal state is necessary for this effect, it is not the essential cause of it.

THE "ACIDITY" OF FULLER'S EARTH.

To determine whether the acid reaction generally displayed by fuller's earth is the cause of the effects observed, the degree of "acidity," or rather the power of the earth to adsorb bases, was determined for each specimen by titration of 2 gm. of the earth, suspended in 100 cc. of distilled water, with tenth normal sodium hydroxide, using phenolphthalein as an indicator. *A priori* one might expect that the power of adsorbing alkali would be proportionate to, or at least run parallel with, the power of adsorbing alkaloids. This, however, is not the case, as can be seen by a glance at Table 1. Nevertheless, specimens devoid or practically devoid of acidity, like kaolin or Pear's precipitated fuller's earth, fail to adsorb alkaloids and those of lowest acidity are lowest in the list of alkaloidal adsorbents. Hence the presence of "acidity" is necessary to enable fuller's earth to adsorb alkaloids; though its degree is by no means a measure of the degree of this power. It therefore appears there are at least two factors involved in the adsorption phenomenon under consideration: the one the "acidity," the other the colloidal state. Whether the reason for the comparatively high adsorptive power of "Olson" and "Lester" fuller's earth, in spite of their rather low "acidity," is due to a relatively higher content of colloid than is present in more acid earths of lower activity, or whether there are two different "acidities" involved, one of importance in adsorption of alkaloids and the other not, remains to be settled. Nor have I the data at hand, at present, to discuss with any degree of profit the other theory previously advanced. On work on these questions I hope to report in the near future.

TABLE 2.—Proportion of fuller's earth needed to remove one part of alkaloidal salt from solution.

Alkaloidal Salt	Lloyd's Reagent	General Reduction Co	Olson Fuller's Earth	Lester Fuller's Earth
Morphin sulphate	6	20	26	36
Quinin bisulphate	10	30	41	50
Nicotin hydrochlorid	20	50	100	110
Cocain hydrochlorid	20	75	95	150
Aconitin nitrate	50	70	100	120
Strychnin sulphate	40	110	120	200
Colchicin hydrochlorid	130	160	200	
Malachite green	50	65	70	100

The addition of Congo-red to fuller's earth enables one to determine roughly, but quickly, the presence and degree of "acidity." It will be seen (Table 1) that all the earths that gave a blue or purple color with Congo-red were found active, while with the inactive kaolin there was no change; the others produced intermediate tints.

THE ADSORPTION OF VARIOUS ALKALOIDS BY FULLER'S EARTH

It will be seen from Table 2 that the various alkaloids differ in their relation to fuller's earth. For instance, a smaller quantity of an earth is needed to remove a morphine than a quinine salt; and less fuller's earth is needed to remove quinine bisulphate than strychnine sulphate. Colchicine needs the largest amount. As will presently be seen, these relations are significant in connection with the antidotal value of fuller's earth for these different alkaloids.

THE ACTIVITY OF ALKALOIDAL FULLER'S EARTH COMPOUNDS.

The alkaloidal fuller's earth compounds resist dilute acid; but are decomposed by alkalies, even as dilute as fiftieth normal sodium carbonate, which is approxi-

mately the alkalinity of the intestinal juice. When fuller's earth compounds of various alkaloids are treated with fiftieth normal sodium carbonate solution and the solution is acidified, it yields precipitates with Mayer's reagent, apparently in proportion to the solubility of the free alkaloid in water: the nicotine precipitate is much more copious than that obtained with cocaine; and the latter more abundant than the aconitine or the strychnine precipitate. Emetine yields only a trace. The concentration of the morphine solution obtained under these circumstances is below the threshold of distinct precipitation by Mayer's reagent, as is also a saturated solution of morphine in water; it yields, however, a copious precipitate with phosphomolybdic acid. Colchicine does not, of course, precipitate with Mayer's reagent, but does with tannic acid.

TABLE 3.—Effect on rabbits of small fatal doses of Strychnine Sulphate (5 mg. per Kilogram) given orally with and without fuller's earth and acid.

Rabbit		Dose			Effect	
No	Weight Gm	Strych. Mg	Fuller's Earth	Acid	Symptoms	Result
A 1	624	0.0031	0	0	Convulsions in 5 min.	Death in 45 min.
A 2	1,100	0.005	0	0	Convulsions in 30 min.	Death in 2½ hrs.
A 3	960	0.004	0	0	Convulsions in 45 min.	Death in 18 hrs.
A 4	2,000	0.010	0	0	0	Recovery
A 5	680	0.0034	0	0	Convulsions in 75 min.	Recovery
A 6	660	0.0033	0	0	Convulsions in 4° min.	Recovery
B 1	794	0.004	0.400	0	Convulsions in 4° min.	Death in a week
C 1	1,021	*0.005	1.500	1.500 tartaric	0	Recovery
C 3	1,100	0.005	0.600	0.600 tartaric	0	Recovery
C 4	794	0.008	0.800	0.800 tartaric	0	Death in 2½ hrs.
C1 1	640	0.0034	1.020*	1.020 tartaric*	0	Recovery
C1 2	732	0.0037	0.370*	0.370 tartaric*	Convulsions in 45 min.	Death in 6 hrs.
D 1	740	0.0037	1.110	2.220 NaH_2PO_4	0	Recovery
D 2	620	0.0034	0.340	1.020 NaH_2PO_4	0	Recovery
D 3	727	0.0037	0.370	0.740 NaH_2PO_4	0	Recovery
D 4	674	0.0033	0.310	0.310 NaH_2PO_4	0	Recovery
D 5	2,265	0.0115	1.150	1.150 NaH_2PO_4	0	Recovery
D1 1	740	0.0037	1.110*	1.110 NaH_2PO_4*	0	Recovery
D1 2	1,070	0.0054	1.600*	1.600 NaH_2PO_4*	0	Recovery
D1 3	1,040	0.0052	1.040*	1.04 NaH_2PO_4*	0	Recovery
D1 4	560	0.0028	0.750*	0.750 NaH_2PO_4*	0	Recovery
D1 5	570	0.0028	0.840*	0.840 NaH_2PO_4*	0	Recovery

* Five minutes later.

In view of this dissociability of the alkaloidal fuller's earth compounds by very dilute alkali, it is easy to understand why they become active in the animal body in spite of the fact, as Gordin and Kaplan[7] have shown, that the digestive ferments have no disrupting effect on these compounds. Being insoluble in acid liquids, even in the presence of pepsin, they pass through the stomach without acting on this viscus and without being acted on. On arriving in the intestine, they are gradually dissociated into their constituents, yielding the alkaloid to absorption. This explains why the general action of alkaloids, administered in this combination, is markedly delayed; and why a larger does is needed to obtain the same effect.

TABLE 4.—Effect on rabbits of large fatal doses of Strychnine Sulphate (10 mg. per Kilogram) given orally with and without fuller's earth and acid.

Rabbit		Dose			Effect	
No	Weight Gm	Strych. Mg	Fuller's Earth	Acid	Symptoms	Result
A 1	2,750	0.0125	0	0	Convulsions in 4° min.	Death in [illegible]
B 1	1,500	0.015	7.50	0	[illegible]	Death in [illegible]
C 1	624	0.0062	1.25	1.25 tartaric	0	Recovery
D 1	1,370	0.0137	2.27	2.27 NaH_2PO_4	0	Recovery
D 2	570	0.0057	1.14	1.14 NaH_2PO_4	0	Recovery
D1 1	1,370	0.0137	5.60*	5.60 NaH_2PO_4*	Convulsions in 15 min.	Death in [illegible]
D1 2	1,570	0.0157	5.60*	5.60 NaH_2PO_4*	Convulsions in 12 min.	Death in [illegible]

* Five minutes later.

This modification of the action of alkaloids is of toxicologic, of pharmacodynamic, and of therapeutic interest. The diminution of taste, for instance, obtained in this manner has made it possible to produce perfectly pleasant sweet tablets of strichnine (Fantus[8]) for administration to children. The absence of effect on the stomach might be of value in connection with some of the alkaloids. Though, in case of ipecac, the removal of the emetic action by means of fuller's earth also seems to destroy action on certain infusoria, as I have found in as yet unpublished experiments. The delayed absorption might increase the effect on the intestine and its contents; for example, the quinine combination might exhibit

[7] Gordin and Kaplan: Jour. Am. Pharm. Assn., December, 1914, iii, 1656.

[8] Fantus, Bernard: Tabellae Dulces, Sweet Tablets for Children's Medication, Jour. Am. Pharm. Assn., May, 1914, p. 656.

amebicidal action in the intestine. The delayed absorption of cocaine may make the cocaine combination of value as an antipruritic in weeping skin disease. Work on some of these questions is being carried on at present.

THE NAMING OF THE ALKALOIDAL FULLER'S EARTH COMPOUNDS.

Inasmuch as some of these alkaloidal fuller's earth compounds are likely to prove of therapeutic value, it might be well to discuss the terms that have been applied to them. Lloyd named these "alcresta" alkaloids. It is under this title that Eli Lilly & Co. propose to place them on the market. The name is unfortunately not descriptive of the nature of the compound.

TABLE 5.—Effect on dogs of fatal dose of Strychnine Sulphate (2 mg. per Kilogram) given orally with and without fuller's earth and acid.

Dog		Previous Adm. of Morphin. 5 Mg per Kg.	Dose				Effect	
No.	Weight, Gm.		Strych. Sulph., 2 Mg per Kg.	Accomp (+) or Followed	Fuller's Earth	Acid	Symptoms	Result
A 1	8,500	0	0.017		0	0	Convulsions in 12 minutes	Death in 26 minutes.
A 2	9,500	0	0.019		0	0	Convulsions in 10 minutes	Death in 11 minutes.
A 3	7,000	0.035	0.014		0	0	Convulsions in 100 minutes	Death in 135 minutes.
A 4	7,300	0.037	0.0146		0	0	Convulsions in 25 minutes	Death in 40 minutes.
A 5	14,000	0.070	0.028		0	0	?	Death in 24 hours.
A 6	8,750	0.040	0.014		0	0	Convulsions in 7 hours.	Death in 20 hours.
B 1	8,000	0	0.016	+	4.80	0	Convulsions in 30 minutes lasting for 6.30 hours	Recovery.
C 1	19,500	0	0.039	+	12.00	12.0 Tart.	Emesis + Conv. 0	Recovery.
C 2	9,000	0	0.018	+	5.4	5.4 Tart.	Emesis (?) Conv. 0	Recovery
C 3	5,000	0	0.010	+	3.0	2.0 Tart.	Convulsions in 2.30 hours	Death in 2:45.
C 4	9,000	0	0.018	+	5.4	1.8 Tart.	Convulsions in 1 30 hours	Recovery
C 1	8,500	0	0.019	5 min. later	5.7	5.7 Tart.	Convulsions in 14 minutes	Recovery
C 2	12,500	0	0.025	5 min later	7.5	7.5 Tart.	Emesis in 20 minutes	Recovery.
C 3	6,500	0	0.013	5 min later	3.9	3.9 Tart.	?	Death in 20 hours.
C 4	16,000	0	0.032	5 min later	9.6	9.6 Tart.	0	Recovery.
C 5	7,500	0	0.015	10 min later	4.5	4.5 Tart.	Convulsions in 10 minutes	Death in 20 minutes.
D 1	15,500	0	0.031	+	9.3	18.6 NaH_2PO_4	Emesis, slight	Recovery
D 2	14,500	0	0.029	+	8.7	17.4 NaH_2PO_4	Defecation	Recovery
D 3	12,000	0	0.024	+	7.2	14.4 NaH_2PO_4	Emesis	Recovery
D 4	8,500	0	0.019	+	5.7	5.7 NaH_2PO_4	Convulsions in 78 minutes	Death in 130 minutes.
D 1	7,000	0	0.014	5 min later	4.2	8.4 NaH_2PO_4	Emesis, convulsions (?)	Death in 20 hours
D 2	15,500	0	0.031	5 min later	9.3	18.6 NaH_2PO_4	Convulsions in 4 hours	Death in 20 hours
D 3	4,000	0.020	0.008	5 min later	2.4	2.4 NaH_2PO_4	0	Recovery
D 4	8,500	0.042	0.017	10 min later	5.1	5.1 NaH_2PO_4	Convulsions, slight	Recovery
D 5	6,250	0.0325	0.0127	10 min later	3.8	3.8 NaH_2PO_4	0	Recovery
D 6	6,900	0.035	0.014	15 min later	4.2	4.2 NaH_2PO_4	0	Recovery
E 1	4,125	0	0.00825	+	2.475	5.0 Potas. Bitart	Convulsions (?)	Death in 5 hours

McGuigan[9] has applied the name "colloidal" strychnine to the strychnine compound with fuller's earth; a name I believe to be erroneous, as the moment the combination between the colloid and the alkaloid occurs, the colloidal state is destroyed and a coarse suspension results, as may be shown by the readiness with which morphine produces deflocculation of a fuller's earth sol or gel. It appears to me that the best name to apply to the strychnine compound would be "strychninated fuller's earth"; to the morphine compound "morphinated fuller's earth"; to the cocaine compound "cocainated fuller's earth," etc.; terms analogous to "chlorinated lime" and "sulphurated potash."

Lloyd first hoped that his reagent would prove a universal antidote for alkaloids and he describes it as one of the bitterest disappointments of his life when it was shown by Dr. Felter, in 1911, that the combination of Lloyd's reagent with strychnine was still capable of killing a dog in convulsions. Lloyd suggested to me that the addition of tartaric acid or of stearic acid to his reagent might raise its anti-

[9] McGuigan, Hugh: A Colloidal Compound of Strychnine and Its Pharmacology, The Journal A. M. A., November 28, 1914, p. 1933.

dotal value. It will presently be seen that this is indeed the case with tartaric acid. Experiments with the stearic acid combination proved negative.

The experiments recorded below were undertaken primarily to study the toxic action of alkaloidated fuller's earth It soon became apparent, however, that fuller's earth did possess antidotal value against certain alkaloids, while it had little value against others, as will be shown by the following data.

ANTIDOTAL VALUE IN STRYCHNINE POISONING.

The antidotal value of fuller's earth in strychnine poisoning in the rabbit may be estimated from Tables 3 and 4. It will be seen in Table 3 that 5 mg. per kilogram is invariably convulsive and frequently fatal for small rabbits; that, on the other hand, a large rabbit (A 4) showed no effect from such a dose. Eliminating, therefore, the only other large rabbit in this series (D 5) from consideration, we find that fuller's earth alone is not antidotal to strychnine. The addition of tartaric acid or of sodium dihydrogen phosphate to the fuller's earth renders it, however, capable of preventing convulsions and of saving life in small rabbits, even if administered five minutes after the poison has been given. The sodium dihydrogen phosphate showed itself superior to the tartaric acid by having this effect invariably, while with the tartaric combination convulsions and deaths have occurred. The dose of 10 mg. per kilogram (Table 4) is invariably fatal; and yet the addition of tartaric acid or of sodium dihydrogen phosphate to fuller's earth has enabled it to prevent effects, if administered at the same time; but not, if administered five minutes later. Against 15 mg. per kilogram, fuller's earth with sodium dihydrogen phosphate has been useless so far as saving of rabbits is concerned; but it, no doubt, postponed the effects to a considerable degree, as will be seen from the following observations:

TABLE 6.—Effect on rabbits of fatal doses of Morphine given orally with and without Fuller's earth.

Rabbit		Dose			Effects	
No.	Weight gm.	Morphine Sulphate per Kg.	Amount of Fuller's Earth followed	Fuller's Earth	Symptoms	Result
A 1	840	1 gm.		0	Large Coma in 2 hrs.	Death in 7 hrs.
B 1	760	1 gm.	5 min. later	8 gm.	Some depression	Recovery
B 2	1,050	1.5 gm.	5 min. later	8 gm.	Some depression	Recovery
B 3	1,150	2 gm.	5 min. later	8 gm.	Some depression	Recovery
B 4	710	1 gm.	10 min. later	8 gm.	Some depression	Recovery
B 7	670	1 gm.	15 min. later	8 gm.	Some depression	Recovery
B 8	1,160	1 gm.	30 min. later	8 gm.	Large Coma in 30 min.	Death in 7 hrs.
B 9	760	1 gm.	20 min. later	10 gm.	Large Coma in 2 hrs.	Death in 3 hrs.

Rabbit D 10, weighing 907 gm. was given 0.015 gm. strychnine with 4.50 gm. each of fuller's earth and of sodium dihydrogen phosphate. Death occurred in four hours and thirty minutes.

Rabbit D 11, weighing 2,660 gm. was given 0.040 gm. of strychnine with 13.3 gm. each of fuller's earth and sodium dihydrogen phosphate. Death occurred in thirty-two hours.

Table 5 shows that a dose of 2 mg. per kilogram is invariably fatal to dogs. The addition of fuller's earth saved life, but did not prevent convulsions. The addition of tartaric acid and of sodium dihydrogen phosphate frequently prevented convulsions and generally saved life. However, emesis was so frequently produced as to vitiate the results. Therefore morphine was given about one hour before the administration of the poison. This preliminary administration of morphine, of course, produced vomiting and often defecation within the hour, followed by a depression of the vomiting center, so that the doses were now regularly retained. Experiments A 3 to A 6 (Table 5) show that the morphine does not save the life of the animal, though it delays results. Experiments D 3 to

D 6 show that fuller's earth and sodium dihydrogen phosphate are capable of saving life, even though no emesis takes place. The fact that it was possible to save the life of morphinized dogs, even if the antidote was given five, ten and fifteen minutes after the poison, while the antidote failed to produce such result without the morphine, is most interesting and requires further study. Possibly it is due to delayed evacuation of the stomach.

A dose as large as 4 mg. per kilogram makes demands on the antidote that it is not able to meet, as will be seen from the following experiments:

Dog C 6, weighing 9 kg., was given, at 9:15 a. m., 0.036 gm. strychnine with 5.4 gm. each of fuller's earth and tartaric acid. It was found dead next morning, no convulsions having been observed.

Dog C 7, weighing 13.5 kg., was given at 9:30 a. m. 0.108 gm. strychnine with 9.1 gm. each of fuller's earth and of tartaric acid. There was slight emesis at 11 a. m. The animal was found dead next morning, no convulsions having been observed.

ANTIDOTAL VALUE IN MORPHINE POISONING.

Table 6 shows that the antidotal value of fuller's earth is much greater for morphine than it is for strychnine. This is probably due to the fact, shown in Tables 1 and 2, that morphine is much more readily removed from solutions by fuller's earth than are any of the other alkaloids, as well as to the slight solubility of the alkaloid morphine and the large dose needed to produce death in these animals. It will be noted that the mere addition of fuller's earth saved rabbits from as much as twice the fatal dose of morphine, and that fuller's earth was still capable of saving life, if given ten and fifteen minutes later, but not if given twenty minutes later. The administration, at intervals, of fuller's earth in morphine poisoning in human beings, even after hypodermic administration of the poison or evacuation of the stomach, appears indicated; as the morphine excreted into the stomach would be absorbed by the clay and its reabsorption prevented or at least delayed.

TABLE 7.—Effect on dogs of fatal doses of Cocaine with and witout Morphine and fuller's earth.

Dog		1 Hour Prev.	Dose		Effects	
No.	Weight, Gm.	Hypo. of Morphin, 5 Mg. per Kg.	Cocain, Gm.	Fuller's Earth	Symptoms	Result
A 1	7,250	0	0.1 per kg.	0	Convulsions in 25 min.	Death in 90 min.
A 2	3,000	0	0.1 per kg.	0	Convulsions in 15 min.	Death in 20 hrs.
A 3	3,800	0	0.2 per kg.	0	Convulsions in 7 min.	Death in 16 min.
A 4	7,560	0.040	0.1 per kg.	0	Whining cec.	Recovery.
A 5	5,946	0.025	0.1 per kg.	0	Depr., later excit.	Recovery.
A 6	6,850	0.055	0.2 per kg.	0	Convulsions in 220 min.	Death in 260 min.
A 7	7,140	0.055	0.2 per kg.	0	Convulsions in 15 min.	Death in 30 min.
A 8	4,100	0.030	0.2 per kg.	0	Depression	Death in 20 hrs.
B 1	6,000	0	0.1 per kg.	60.0	Emesis in 85 min.	Recovery.
B 2	12,000	0.060	0.1 per kg.	120.0	0	Recovery.
B 3	6,800	0.035	0.2 per kg.	136.0	0	Recovery.
B 4	4,800	0.025	0.2 per kg.	96.0	0	Recovery.
B 5	3,740	0.020	0.2 per kg	76.0	0	Recovery.

ANTIDOTAL VALUE IN COCAINE POISONING.

In view of the local anesthetic quality of cocaine, it is of interest to note that the dog B 1 (Table 7), that received it together with fuller's earth, vomited. Evidently the compound produced by fuller's earth with cocaine is not decomposed in the stomach, which is entirely in accord with the general tendency of the alkaloidal fuller's earth compounds not to give up the alkaloid to an acid solution. This made it necessary again to use hypodermic injections of morphine, one hour previously, to prevent the emesis. However, inasmuch as morphine is an antagonist to cocaine, as will be seen by comparing the result in A 1 and A 2 with A 4 and A 5, it was necessary to use a large fatal dose of cocaine (0.2 gm. per kg.) in order to have a fatal does in the presence of morphine. The antidotal value of fuller's earth under these circumstances is demonstrated by the uniformly fatal results in experiments A 6, A 7 and A 8, as compared with the

uniformly negative results in Experiments B 3, B 4 and B 5. Evidently fuller's earth is an antidote to cocaine, and it does not need acid to produce this effect, at least in the presence of morphine, which probably enhances the antidotal effect of fuller's earth by delaying the emptying of the stomach.

ANTIDOTAL VALUE IN NICOTINE POISONING.

Rabbits are killed within twenty minutes by 0.20 gm. nicotine per kilogram, as will be seen from Table 8. The addition of fuller's earth to such a dose is followed by recovery. A dose of 0.40 gm. per kilogram is fatal even when fuller's earth and sodium dihydrogen phosphate are added. If the antidote is given five minutes after the poison was administered, it is unable to save life. Evidently nicotine acts too rapidly to admit of any interval between the giving of the poison and of the antidote.

ANTIDOTAL VALUE IN IPECAC POISONING.

Emetic Dose.—If two dogs of similar size and with empty stomachs are chosen, and one of these is given, by means of the stomach tube, 0.3 cc. per kilogram of fluidextract of ipecac mixed with ten times the volume of water, while the other receives the same dose with the addition of 3 gm. of active fuller's earth per cubic centimeter of fluidextract used, the first dog will vomit profusely and many times—usually not until after half an hour, but within one hour—and soon afterward may have bowel evacuations, which sometimes become bloody. The other dog will show no effects whatever excepting perhaps, occasionally, a looseness of the bowels on the next day.

Fatal Dose.—A dose of 1.5 cc. of fluidextract of ipecac per kilogram has been found uniformly fatal in dogs, as will be seen from the following experiments:

Dog. A, weighing 15.5 kg. was given 23.25 cc. of fluidextract of ipecac, diluted with 232.5 cc. of water, at 9:42 a. m. Formed bowel movement occurred at 11:25; vomiting at 12, and again at 12:15; semi-liquid bowel movement at 12:30. Several other attacks of emesis occurred during the afternoon, the animal refusing food, but drinking water freely. The next day it was found that the animal had bloody bowel movements; and on this day it died at 10 a. m. Necropsy showed hemorrhagic gastro-enteritis. The urine obtained from the bladder contained albumin and a few red blood corpuscles, but no casts.

Similar results were obtained in three other dogs. A different result was obtained in Dog E. This dog, weighing 7.25 kg. was given 10 cc. of fluidextract of ipecac diluted with 100 cc. of water. Within half an hour, the dog showed marked depression, salivation, and had a fluid defecation, but did not vomit. The animal died within five hours after the administration of the poison, without having had emesis or bloody purging. On post-mortem examination, performed twenty hours later, the gastro-intestinal tract was found pale and without gross evidence of inflammation. Death had evidently occurred too soon for inflammation to have developed.

Entirely different is the result when the total dose of fluidextract of ipecac is mixed with fuller's earth, 3 gm. per cubic centimeter, as may be seen from the protocol of experiment on Dog J. This animal, weighing 9.5 kg., was given 14.25 cc. of fluidextract of ipecac diluted with 142.5 cc. of water, to which 42.75 gm. of fuller's earth were added. There was no effect whatever, excepting that the animal refused food and drink for several hours afterward. During the succeeding days the animal was perfectly normal. Its bowel movements were hard and clay-colored lumps. Its urine was free from albumin. The animal was chloroformed five days afterward. Its gastro-intestinal tract was found

normal. Identical results were obtained in three other dogs. On the other hand, one dog whose stomach was full of food vomited shortly after administration of the dose, probably from over-distention of the stomach. Two other dogs recovered from twice the surely fatal dose of fluidextract of ipecac, namely, 3 cc. of the fluidextract per kilogram, diluted with ten times the amount of water to which a proportionate amount of fuller's earth had been added. Both dogs had a single emesis soon after injection, probably from over-distention of the stomach, for the bulk of the dose is considerable; but developed no further results of any importance and recovered completely, as may be seen from the protocol of one of these experiments:

A dog, weighing a little less than 12 kg., was given 35 cc. of fluidextract of ipecac with 350 cc. of water and 14 gm. of Lloyd's reagent. The dose was administered at 9:50 a. m. Shortly afterward, profuse salivation appeared and lasted for over an hour. Twenty minutes after the injection a single emesis occurred, the vomit consisting of thin watery fluid with a small amount (3 gm.) of the injected preparation. There was no further emesis. A fine muscular tremor appeared at 12 m., and lasted about an hour. Complete recovery took place.

Evidently fuller's earth is a powerful antidote to ipecac. To test its practical value in case of poisoning, the antidote was administered at varying intervals of time after the introduction of the poison with results that might best be shown by tabulation.

TABLE 8.—Effect on abbits of fatal doses of Nicotine given orally with and without fuller's earth and acid.

Rabbit		Dose				Effects	
No	Weight, Gm	Nicotine tin per kg	Amount of Fuller's Earth	Fuller's Earth	Acid	Symptoms	Result
A 1	1,040	0.10		0	0	0	Recovery
A 2	964	0.20		0	0	Convulsions in 15 min	Death in 20 min
A 3	900	0.20		0	0	Convulsions in 15 min	Death in 20 min
A 4	1,040	0.20		0	0	Convulsions in 10 min	Death in 15 min
B 1	740	0.20	+	18.0	0	0	Recovery
B 2	800	0.20	+	16.0	0	Depression in 4 min	Recovery in 60 min
B 3	570	0.40	+	23.0	0	Depression	Death in 120 min
B1 1	740	0.20	5 min	18.0	0	Convulsions in 11 min	Death in 30 min.
D 1	900	0.20	+	10.0	5.0 NaH_2PO_4	0	Recovery
D 2	680	0.40	+	13.6	6.8 NaH_2PO_4	?	Death within 20 hrs.

It will be noted (Table 9) that, when fuller's earth was given mixed with the poison, no damage occurs.

When the fuller's earth was given ten minutes afterward, the animal was seriously affected by the poison, but recovered. Fuller's earth was incapable of saving animals when administered twenty minutes or longer after the poison; but it rendered the picture of intoxication milder and postponed death in inverse proportion to the length of time that elapsed between the administration of the poison and of the antidote.

ANTIDOTAL VALUE IN ACONITINE POISONING.

Table 10 shows that fuller's earth has some antidotal value in this condition also. It is difficult, however, to arrive at a definite judgment as to the degree of its value. It produces emesis even after the previous administration of morphine. That the emesis does not save life, will be seen from the fact that all the dogs that died vomited. They generally vomited more profusely than the dogs that recovered. Therefore emesis was probably not a factor in those cases in which recovery took place. It will be noted that in practically all the animals that did recover rather marked symptoms occurred: emesis generally the next day, and in several of them bloody defecation, which in one case lasted for several days. The death of the animal D 5 may not have been due to the poison, as the animal was sick before it was subjected to the experiment, as was discovered subsequently. In another series of animals, in which the alkaloid

aconitine (crystalized) was used—not the salt—death occurred in every case, even when fuller's earth or fuller's earth with acid were added, the fatal result being postponed for from twenty-four to forty-eight hours. Evidently the free alkaloid does not combine with fuller's earth as readily as does the salt.

TABLE 9.—Results of administration of fatal dose (1.5 cc. per Kilogram) of Fluidextract Ipecac with and without fuller's earth at varying intervals.

Dog	Administration	Emesis		Defecation	Result	Post-Mortem Examination
		Onset, Min.	Times			
A	Ipecac. . ..	136	5	Bloody	Death in 24 hours.	Violent gastro-enteritis.
E	Ipecac.....	.	0	Liquid not bloody	Death in 5 hours.	Gastro-intestinal tract pale.
F	Ipecac and fuller's earth 40 minutes later.	...	0	Liquid not bloody.	Death within 20 hours.	Gastro-enteritis.
G	Ipecac and fuller's earth 30 minutes later.	55	0	Bloody.....	Death in 25 hours	Gastro-enteritis.
H	Ipecac and fuller's earth 20 minutes later.	70	1	Bloody.....	Death within 44 hours.	Less severe gastro-enteritis.
I	Ipecac and fuller's earth 10 minutes later.	22	13	Bloody.....	Aborted 5 fetuses. Lived for 5 days.	Gastro-intestinal tract showed evidences of past enterocolitis.
J	Ipecac and fuller's earth mixed.	..	0	Hard, clay-colored	Recovery....	Gastro-intestinal tract normal.

TABLE 10.—Effect on dogs of fatal dose of Aconitine Nitrate, Crystallized, Merck (4 mg. per Kilogram) given orally with and without fuller's earth and acid.

Dog		Morphin Sulph., 5 mg. per kg. Hypo. 1 Hour Prev. Gm.	Dose			Effects	
No.	Weight, Gm.		Aconitin	Fuller's Earth	NaH_2PO_4	Symptoms	Result
A 1	6,350	0.032	0.0254	0	0	Profuse emesis in 5 min.	Death in 50 min.
A 2	6,005	0.025	0.0204	0	0	Conv., emesis in 4 hours.	Death in 5 hrs.
B 1	8,000	0.048	0.0344	17.20	.	0	Recovery
N 5	10,840	0.055	0.0432	21.60	.	Emesis next day	Recovery
B 2	4,760	0.025	0.0190	7.60	.	Emesis (slight) in 6 hours	Death in 24 hrs.
D 1	9,500	0.048	0.0380	19.00	19.00	Emesis next day	Recovery
D 2	9,090	0.045	0.0363	18.10	18.10	Emesis next day Bloody defecation	Recovery.
D 3	8,800	0.043	0.0344	13.76	13.76	Emesis, clear in 2 30 hours	Recovery.
D 4	6,670	0.033	0.0263	13.14	13.14	Bloody defecation next day	Recovery.
D 5	7,250	0.036	0.0290	14.50	14.50	Emesis in 1 30 hours.	Death in 44 hrs.

TABLE 11.—Effect on dogs of fatal doses of Colchicine (2 mg. per Kilogram) given orally with and without fuller's earth and acid.

Dog		Dose				Effects	
No.	Weight	Prelimi nary Morphin. Sulph. 5 mg. per kg.	Colchic	Fuller's Earth	Acid	Symptoms	Results
A 1	10,000	0	0.020	0	0	Vomiting in 1 30 hours. Bloody defec. in 4 30 hours.	Death with violent gastritis and colitis within 20 hrs.
A 2	7,740	0.035	0.015	0	0	Vomiting and bloody defec. next day	Death with violent gastritis and colitis in 30 hours.
D 1	8,000	0.040	0.016	7.60	7.60 NaH_2PO_4	Bloody defec. next day	Death with less severe colitis in 60 hours

ANTIDOTAL VALUE IN COLCHICINE POISONING.

The antidotal value of fuller's earth against colchicine poisoning is, no doubt, very slight, even though the number of experiments on this point, as shown by Table 10, may be insufficient. With the comparative indifference, however, of colchicine toward fuller's earth, as shown in Table 2, a different result could hardly be expected.

PERSONAL EXPERIMENTS WITH METHYLENE BLUE AND FULLER'S EARTH.

To put the question to an approximate test whether fuller's earth would be likely to act in human beings as it does in the lower animals, I and one of my colleagues took doses of methylene blue with and without fuller's earth with the following results:

When a dose of 0.010 gm. of methylene blue is taken a dark green color appears in the urine within a short time and disappears within twenty-four hours. If 1.0 gm. of fuller's earth is added to 0.010 gm. of methylene blue in solution, the urine acquires a faint greenish tint for twenty-four hours; the difference between the two specimens of urine being striking.

The results of larger doses might probably best be presented as in Table 12.

It will be noted that fuller's earth alone postponed the appearance of the discoloration, lessened the duration of intense discoloration, but not the duration of slight discoloration. The addition of a small amount of sodium dihydrogen phosphate did not increase very greatly the effect of fuller's earth. The addition of a larger dose that acted on the bowel within an hour and thirty minutes

markedly lessened the period and amount of discoloration. It seems safe to conclude that *fuller's earth, especially when combined with a laxative dose of sodium dihydrogen phosphate, is capable of greatly lessening in the human the absorption of substances that are readily adsorbed by fuller's earth.*

CONCLUSIONS.

1. Alkaloidal fuller's earth compounds do not act on the stomach; but are gradually dissociated in the intestine, producing a delayed and milder general action.

2. Fuller's earth has antidotal value in morphine, cocaine, nicotine, and ipecac poisoning. It has less value in strychnine and in aconitine poisoning, though even in these conditions it is capable of saving life, when combined with sodium dihydrogen phosphate. In colchicine poisoning it is of little value.

TABLE 12.—Results of doses of Methylene Blue with and without fuller's earth and Sodium Dihydrogen Phosphate.

Experiment	Dose	Effect
1	0.050 gm. methylene blue	Urine green in 1 hr. 25 min., lasting for 2½ days
2	0.050 gm. methylene blue	Urine green in 9 hrs., lasting for 24 hrs.
	2.500 gm. fuller's earth	Traces of discoloration occasionally for 2 days longer
3	0.050 gm. methylene blue	Urine green in 10 hrs. 30 min., lasting for 17 hrs.
	2.500 gm. fuller's earth..	Traces of discoloration occasionally for 2 days longer.
	2.500 gm. NaH_2PO_4.. ..	
4	0.050 gm. methylene blue	Bluish brown liquid defecation in 1 hr. 30 min.
	2.500 gm. fuller's earth	Urine light green in 10 hrs.
	5.000 gm. NaH_2PO_4.. ...	Urine green in 14 hrs., lasting for 7 hrs.
		Traces of discoloration occasionally for 12 hrs. longer

3. The power of adsorbing alkaloids is strongly developed in some fuller's earths and very feebly in others. The adsorptive value of commercial fuller's earths should be stated by the dealers; and pharmacists should demand specimens of high activity. Lloyd's reagent possesses this power to the highest degree.

4. Fuller's earth is not synonymous with kaolin, as the United States Dispensatory and the National Dispensatory would lead one to infer. It is a substance with markedly different properties.

ORIGIN OF URIC ACID.

The uric acid excreted in the urine is not by any means exclusively derived from alimentary purines; a part of it is formed in the organism. Probably the whole of this endogenous uric acid is not derived from nucleo-albumins, but from other albuminoids. When a subject is submitted to a purine-free diet or one deficient in nitrogen it is difficult to reduce the uric acid below 0.005 gm. per kilo, body weight. Probably a part of this 0.005 gm. comes from the body nucleins or other albuminoids. At any rate, they are of endogenous origin. With purine-free diet given in excess of the requirements for nutriment the amount of urinary uric acid increases. This increase is probably also endogenous. When an excess of purine-containing diet is taken, the increase in uric acid excreted is still greater than can be derived from the food. Here, again, endogenous formation must occur. A part at least of this endogenous uric acid is formed shortly after a meal. More certain knowledge of the physiological role of uric acid excretion would be obtained by the systematic study of the other nitrogenous constituents of urine. In superalimentation with nitrogenous diet the uric nitrogen does not represent a tenth part of the total nitrogen excreted.—*E. Maurel* (*L'Union pharm,* 1914, 55, 337, *through Pharmaceutical Journal.*)

Editorial

E. G. EBERLE, Editor..... 63 Clinton Building, Columbus, Ohio

PROGRESSIVE WORK OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

INTERESTED workers in the American Pharmaceutical Association give thought to continued usefulness of the Association. The question of representation in and functions of the House of Delegates is receiving much consideration at the present time. A number of state associations have taken action on this important matter, and expressed their wishes in the resolution submitted by Chairman H. P. Hynson, as follows:

WHEREAS, The correlation of the state associations and their attachment to the A. Ph. A. would greatly enlarge the scope and increase the usefulness of the several state associations and would also increase the strength and influence of the American Pharmaceutical Association; and

WHEREAS, Such correlation and attachment would be in line with the progress of the times and consistent with all forms of effective organization; therefore, be it

Resolved, That this Association in convention assembled does hereby endorse the proposition to make the House of Delegates a body composed exclusively of representatives of the state associations; and be it

Further Resolved, That the delegates of this Association are hereby instructed to lend all the assistance in their power toward the formation of a House of Delegates composed of state association representatives, only.

If this plan of organization is adopted it will give the state associations complete control of the House of Delegates. Whether or not it might be better to have the Association and the Local Branches represented, also, in the membership of the House of Delegates, is not the question—this will be decided probably at the San Francisco meeting—the big thing is that the plan proposed will correlate the state associations with the A. Ph. A. and provides for an organized body for the discussion and shaping of common interests. Under present conditions each state association acts without any co-operation with the others, though organized for like purposes; the contemplated organization brings the associations together and should greatly promote their usefulness and strengthen their work. The subjects for constructive work are as numerous as those that confront the pharmacist.

The American Pharmaceutical Association early in its history recognized the importance of state organizations, in that respect proceeding along somewhat different lines than in the establishment of our Government, wherein States created the central governing body. The parent organization should welcome the "grown-up children" home, to plan for the welfare of the "pharmaceutical family." If pharmaceutical associations are serviceable to pharmacists in their respective states, and they undoubtedly are, then the scope of their usefulness will be enlarged by working together.

The prosperity and wonderful progress of this country is not the result of natural resources, for the Indians possessed these, but the utilization of them. Many, until recently, had the false impression that the United States was independent of other nations; few had reflected that pharmacy would be disturbed by the troubles of Europe. We are dependent, just as one individual lives by the labors of another, so trades and professions influence industry and science, and the thought can be made applicable to associations.

In order to stimulate the efficiency of the numerous national pharmaceutical associations the scope of The National Drug Trade Conference should be enlarged and its relation with the American Pharmaceutical Association strengthened. Many pharmacists affiliate with several organizations in a spirit of helpfulness without realizing their inability to actively participate in all of them and as a result membership, without service or benefit, not infrequently obtains. There are too many organizations for pharmaceutical workers who have similar objects and their concerted efforts would be productive of greater efficiency.

The American Pharmaceutical Association should be made the grand central organization for all pharmacists and as soon as practicable should have a permanent home where a laboratory could be established and research work conducted. This may be too great an undertaking at present, but perhaps means can be devised whereby the facilities of some institution may become available. This thought, however, is simply suggestive.

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DIVERSIFICATION AND SPECIALIZATION.

THE department store is nothing more than a magnified general store, in the conduct of which system and business methods of a high order obtain.

We are often accused of overdoing things. There is certainly no exception in this connection, for in some of the department stores every demand can be supplied. We are also charged with changeableness; when a method has been overworked we are apt to retract suddenly. The modern drug store is often characterized as a department store, hence this comment. The side-lines in drug stores have been added for increasing the volume of sales and providing more profit; incidentally, we might add that diversification in business was part of the prevailing system.

The time will come when there will again be more specialization, some department stores are now realizing that competent managers for the many departments increase the overhead expense to such an extent that their selling prices on standard goods are not attractive, and the public is beginning to show a preference for "specialty" stores. The smaller stores are becoming more formidable competitors.

Before further comment is made on the drug store, reference to the passing of the book store will illustrate a relevant thought. Every one who was familiar with that institution will admit a preference over the departments, or books as a side-line in stores. Unquestionably the passing of the book store was due to the inclusion of sundry items, which prompted the stocking of books in other

stores as sidelines. May not the variety of stock in drug stores have suggested the inclusion of drugs in department stores?

Bringing the subject nearer to pharmacy, physicians specialized, not only to give better service, but because of greater remuneration therefrom.

The tendency towards side-lines in the drug store is running wild and will be the undoing of the business or result in a division into pharmacies and drug stores. There are many articles other than drugs that have a proper place in the stock carried by the druggist, but when the store presents more the aspect of a toy shop or restaurant than that indicated by the name over the door, it bids one to pause and reflect upon the effect this must have on the patron's views of pharmacy. Modern salesmanship demands a knowledge of goods in stock and the handling of them according to the methods of the specialist in the line. If druggists would carefully estimate their profits in a number of their departments, they would doubtless discard some of them.

There are extremes in diversification and specialization, and a rational medium between extremes is usually productive of the greatest good.

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ADVERTISING.

A PAGEANT representing the history and science of advertising was one of the features of the program of the annual meeting in Chicago of the Associated Advertising Clubs of America.

The moral conceptions which censor advertising have during the last ten years undergone a steady and radical refinement. The force of self-interest has been largely responsible for more critical circumspection in the acceptance of advertisements by publishers and the advertisers have arrived at the conclusion that "tell the truth" policy brings the best returns.

The principle of self-interest will continue to gather force. The character of circulation has a larger element of value than quality, because it gives tone to the advertisements. The character of circulation is the reflex of the publication's character of which not only the reading pages but the advertisements give evidence. The reputable advertiser deems it obnoxious and a display of poor business judgment to have his message associated with disreputable or dishonest advertising.

The advertising of the retailer should be directed with a co-operative purpose, making his messages "salesmen" for the goods he offers for sale. The value of a sale is secondary to a satisfied customer. Both the business and advertising profit by the square deal.

We may perhaps be permitted to say a few words relative to a form of advertising that needs regulation and may be easily adjusted by wise counseling of advertisers and publishers, namely, the insertion of reading notices. We present this thought with a view of being helpful. Unquestionably most of the present day reading notices are educative and have value for the reader, and usually, they emphasize the advertisement. The adjustment should be on the basis of equity; for certainly when one advertiser is favored and another is not, one has received less value than the other. Newspapers have discontinued these

methods, why not the magazines? If all are treated alike, no one is injured. Modern advertisements are of a character that need no further support than the quality of the goods which backs them; don't scatter the shot, concentrate; the advertisements will have more force.

Successful advertising literature is persuasive, its effectiveness depends upon brief, terse and convincing argument. Honesty is implied, for he is a fool who does not know this is the foundation of success; the higher one hopes to build, the more secure the foundation must be.

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HARRISON LAW PRESCRIPTION DECISION.

A RECENT decision issued by the Treasury Department (T. D. 2213) relates to prescriptions for narcotic drugs in any quantity not being exempt from the provisions of the Harrison law, unless for preparations or remedies exempted under Section 6 of that law, namely; such as contain not more than two grains of opium, or more than one-fourth of a grain of morphine, or more than one-eigth of a grain of heroin, or more than one grain of codeine in one fluid ounce. These do not require an official order blank for their sale. The decision was rendered June 7th, and reads as follows:

"Attention is directed to the paragraph on page 4 of Treasury Decision 2172 relating to the exemption of certain "preparations" and "remedies" from the provisions of this law. The question arises whether or not "prescriptions" come within the definition of "preparations" or "remedies" as given in the Act. The word "preparations" as generally used and understood, means ready-made or prepared medicines, and the word "remedies" means that which cures or is efficacious in a specific disease or diseases under all conditions, while the term "prescription" is the written direction or recipe of a physician for the compounding or preparing of a medicine and directions for its use to meet the existing conditions in the case of a particular patient.

It is therefore apparent that the exemptions in Section 6 of the Act as interpreted in Treasury Decision 2172, relating to "preparations and remedies" containing not more than the specified quantities of the drugs enumerated, do not apply to "prescriptions" written by registered physicians calling for any quantity of the narcotic drug, unless such "prescription" is written for a "preparation or remedy" prepared in accordance with the U. S. Pharmacopoeia, National Formulary, or other formula, or for a "remedy or preparation" prepared under private or proprietary formula, carried in stock by a dealer, which may be dispensed without a "prescription."

Every "prescription" therefore, containing a narcotic drug in any quantity with the exemptions noted, must have indicated thereon the name and address of the patient, the date, the name and address of the physician, and his registry number. Such "prescriptions" cannot be refilled and must be filed for a period of two years."

Mr. J. W. England, in a paper before the recent meeting of the Pennsylvania Pharmaceutical Association, says, that this decision is open to serious

question, and that the Treasury Department has erred in making this decision, whereby the medical profession is discriminated against in favor of ready-made preparations and remedies, and that an unnecessary burden is thereby imposed upon the physician and pharmacist, without resultant advantage and with the disadvantage that it tends to make the operation of the Harrison Act more complex.

Mr. England recites that under the decision the term "preparation" is limited strictly to "ready-made preparations and remedies," official and unofficial. Continuing, he says, "If the physician orders 'Elixir of Terpin Hydrate with Codeine, N. F.' no order blank is required, but if he orders on a prescription 4 grains of Codeine and 4 fluidounces of Elixir of Terpin Hydrate, which is of exactly the same composition, he has to use an official order blank. If he orders 'Elixir of Terpin Hydrate with Heroin N. F.' no order blank is required, but if he orders on a prescription 1 grain of Heroin and 3 fluidounces of Elixir of Terpin Hydrate—the same thing—the use of an official order blank is demanded. If he orders 'Compound Mixture of Glycyrrhiza,' U. S. P. (Brown Mixture) he is exempted from the use of the official order blank, but not so if he orders a prescription containing the same ingredients and quantities of the preparation.

The word 'preparation' is derived from the Latin word *preparare*, meaning 'to make ready.' It is the act of preparing, making or compounding, especially a medicinal substance fitted for the use of a patient (Webster). It is *not* necessarily a ready-made medicine. It may be made extemporaneously, as with a prescription. Many preparations now official in the U. S. P. and N. F. were originally prescriptions, and many prescriptions now being used by physicians will become official in the U. S. P. and N. F. in the future.

"The fact that a ready-made preparation may be used in a number of diseased conditions and that the physician's prescription is limited to individual use is immaterial, because the prescription ordered for an individual case may be used, also, for a number of diseased conditions, and in fact, as stated before, often becomes a ready-made preparation."

If a little levity is pardoned, law decisions sometimes bring to mind the good old lady who marked her pies "T. M.;" when asked to explain the initials with reference to one kind, she stated that they meant "'tis mince," for others "'taint mince."

Mr. England concludes his argument by saying:

"It may be claimed that the Treasury Department is justified in making such an inconsistent decision on the ground of expediency, because some physicians may be abusing the exempting privilege of Section 6 of the Harrison Act, but the proper remedy would seem to be, not in the issuance of additional and qualifying regulations, but in a more rigorous enforcement of the existing provisions of the Act."

PROFESSIONAL PHARMACY VS. "COMMERCIAL PHARMACY."

THE judge's charge to the jury in the "Separation Proceedings" presented most interestingly in the June number of the Druggists Circular, recites that divorcement shall not be granted unless the jury is convinced; that the public will be better served by separation of professional from "commercial pharmacy;" that the physician will be better served by this separation; that the pharmacists, both professional and "commercial," will be benefited by it.

Pharmacy cannot be defined without ascribing some relation to medicine; dealing in articles, foreign to pharmacy, is frequently alluded to as "commercial pharmacy." Such erroneous designation should be discontinued. However, accepting of the term "commercial pharmacy" in the judge's charge, as quite generally applied, a jury could readily vote in the affirmative on each of the points and still the sixth argument of "Defendant's Counsel," "that it is impossible to secure the legislation necessary to bring about the proposed divorce," would render the decision of the jury valueless—a clergyman can sell paper dolls, if he desires to do so. The interesting brief should elicit many expressions and arguments of value.

The topic presents one of the most important problems pharmacists must solve and is deserving of careful consideration. The reference to the sixth argument does not imply that legislation cannot *aid* in the establishment of pharmacies and drug stores, but *infers* that a pharmacist may sell articles of merchandise if he is so disposed. If State laws would fix different standards for pharmacists by qualification than for those who do not care to dispense or sell medicines separation would be promoted. The change, however, would be very gradual and largely determined by the inclination of those who hereafter engage in the business. Law did not provide for specialization in the practice of medicine; however, specialization is the order of the day in that profession.

With the addition of numerous side-lines and the greater opportunity for encouraging such business, pharmacy is being neglected in many stores. It would seem that a discussion of the question of separation offers a most interesting topic for association meetings and, by the way, for the House of Delegates. A change will come, whether we direct or not, for the progress of medicine demands higher qualification of pharmacists; on the other hand, the income of stores is increased by sales of merchandise and as a result, proprietors encourage such business. The incompatibility is becoming more pronounced, evidenced by more frequent discussion of the subject.

THE HOUSE OF DELEGATES, A. PH. A.

ADDITIONAL INFORMATION.

H. P. HYNSON.

The Chairman of the "Committee on Investigation" is grateful for a large number of helpful comments on the proposition to make of the House of Delegates a central body for correlating the state pharmaceutical associations, through delegates, and thereby connect the A. Ph. A. directly with all sections of the United States and make it truly representative of the pharmacists of every section of our country; immensely increasing membership and interest in the parent body, as well. It is hoped that the various phases of pharmacy, as represented by the specialized national associations will also be correlated and more closely connected with the A. Ph. A. through the enlargement and extended scope of the Drug Trade Conference.

If some such combinations are not effected under its auspices, the usefulness of the American Pharmaceutical Association will soon pass entirely away through the specialization of effort in the several national associations, as pointedly witnesseth the reading of papers on strictly scientific pharmaceutical subjects at the last meeting of the National Association of Manufacturers of Medicinal Products; the able treatment of commercial problems by the National Wholesale Druggists Association; the elucidation of drug store practice by the National Association of Retail Druggists; the discussion of pharmacy laws by the National Association of Boards of Pharmacy and the control of the teaching of pharmacy by the American Conference of Pharmaceutical Faculties. If the American Pharmaceutical Association does not succeed in correlating and closely attaching to itself the active, energetic state associations, these will, naturally, form sectional unions of great importance.

The conditions surrounding the A. Ph. A. are now very different from those surrounding it when it was formed and when it was the only national body and when there were no state associations and only a few college associations and one local apothecaries' association. Natural and useful pharmaceutical associations, in great profusion, have been formed for every phase of pharmacy and for every geographical section of pharmacy and the one distinct mission left for the A. Ph. A. is to centralize all other important pharmaceutical organizations around itself, without detriment to any and to the greater usefulness and greater strength of all. This is the time with its opportunity, once lost, forever gone.

Dr. James H. Beal, the original promoter and organizer of the House of Delegates, kindly comments as follows:

"I think very favorably of the proposition to restrict the number and character of organizations to be given representation in the House and to declare more specifically what the functions of the House shall comprise.

At the time the resolutions creating the House of Delegates were adopted, I felt that it was a mistake to make its composition as heterogeneous but yielded on this point to avoid endangering the passage of the resolutions, believing that in time the defect would be recognized and corrected.

The great difficulty in making the change is the one which you point out, namely, the possible opposition of some of the institutions and local organizations to being excluded from

the House after having once been admitted thereto. Do you not think it would be possible to at least partially satisfy such objections by inserting in the By-Laws a section providing for the reception of FRATERNAL DELEGATES from bodies not included in the membership, giving to such fraternal delegates the privileges of the floor under more or less restricted conditions?

I believe, also, that the membership should include certain of the general officers of the A. Ph. A. as ex-officio members, and possibly several additional members elected by the Council. Some provision of this sort, it seems to me, is necessary to form a connecting link between the activities of the House and those of the Council.

I do not feel at present that I would insist strongly upon the changes suggested above, but have offered them merely for your consideration.

I trust that your Committee will be able to plan something that will result in converting the House of Delegates into an active and efficient body."

Mr. Joseph W. England, Secretary of the Council, writes:

"I have read with much interest your plea for a change in the character of membership of the House of Delegates, and your plan of procedure, in its essentials, appeals to me very strongly. It is clear, rational, and convincing.

In response to your request to make comments I would like to submit the following, not as the Secretary of the Council, but as member of the Association:

The idea of a House of Delegates originated in the fertile brain of Dr. James H. Beal, enroute with Dr. Henry M. Whelpley, from St. Louis to Denver, in August, 1912, to attend the Denver meeting of the Association.

At this meeting the plan was presented, and freely discussed, and after a number of modifications, the House of Delegates was created, being organized on August 21st, 1912.

It was generally recognized that the plan adopted was in the nature of an experiment, and that changes would have to be made in the near future, and so that these could be readily made, the House of Delegates was created by RESOLUTION of the Association, and not by amendments or additions to the existing by-laws.

Experience has shown that the creation of the House of Delegates was a long step forward, but the initial mistake was made in attempting too much. The membership was made entirely too inclusive. Representation should have been confined to State Associations and the local branches only. As you point out, the delegates of the national bodies.—pharmaceutical, chemical, medical and governmental, should be recognized at the general sessions of the Association and given the privileges of the floor, as heretofore.

As you indicate in your able paper, the 40 or more state associations have the same objects and the same comprehensive character of membership, as has the American Pharmaceutical Association. There is no class distinction. All pharmaceutical interests are represented in the membership. If the States can be induced to 'rally around the flag' of the A. Ph. A., it would be a long, long step forward toward a union of state and national pharmaceutical bodies, with a consequent betterment of all scientific, educational, legislative and commercial interests, as you point out. And that they can be so induced, is shown by the fact that at the Detroit (1914) meeting of the House of Delegates, 36 state associations were represented.

Little argument is needed to show that if active co-operation can be secured between the state pharamaceutical associations and the A. Ph. A., great good must result to both.

Personally, it seems to me that it would be a mistake to confine the proposed representation of the House of Delegates to the state associations only. Why not have the House of Delegates represent, not only state interests, but also local interests AS EXHIBITED IN THE LOCAL BRANCHES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION; the members necessary to form a branch, however, should be reduced from 25 to 15."

Dr. Edward Kremers, of the University of Wisconsin, writes:

"I was surprised to learn how incongruous the house of representatives is. I am heartily in favor of placing the state associations in the closer touch with the A. Ph. A., but I am not convinced that a satisfactory arrangement can be effected until the membership in the state association also implies membership in the national association. However, the subject

is worthy of our careful attention and should receive all consideration possible in the near future."

Dr. F. J. Wulling, of the University of Minnesota and President of the A. C. of Ph. F., writes:

"Before receipt of yours I had regarded the House of Delegates as a factor likely merely to increase the complexity of our manner of doing business. Your suggestions and arguments, however, have much merit in them and, if it can be brought about that this House of Delegates become thoroughly representative of the state associations, I would be very glad to give my approval to a strengthening of the House. I have for a long time favored the closer affiliation of state associations with the A. Ph. A. and I would give my warmest support to any movement that would bind the state associations and the A. Ph. A. into a federation, in which the links would be substantial enough to create a unity of interest that would accomplish the big things for pharmacy as yet unaccomplished. Go ahead."

Dr. J. A. Koch, of the Pittsburgh College of Pharmacy and Chairman of the Executive Committee of the A. C. of Ph. F., writes:

"I have read with much interest your communication referring to the House of Delegates. Fundamentally your object is ideal and I only hope that it can be carried through. I fear though that the greatest difficulty will be to find something for the House of Delegates to do. Unless you can, in some way, tie them to the parent Association by assigning to them some definite work of some importance, I fear it will be difficult to create much interest in the body."

William Mittelbach, member of the Missouri Board of Pharmacy, prominent in all pharmaceutical bodies and loyal to all, communicates the following:

"Your proposal to change membership or representation in House of Delegates of the A. Ph. A. is an improvement. So far, however, I can not see the necessity of such a body at all. A strong committee appointed by the parent body can do all the work that is intended for the House of Delegates and for which it sprang into existence. We have, for years, complained of too many sections, and yet, under the slightest provocation, so to speak, launch still others and more cumbersome ones. Therefore, if we must continue this new branch of the A. Ph. A. let us simplify it by following your suggestion."

Dr. L. E. Sayre, of the University of Kansas, writes:

"As a loyal member of the Association, I am anxious that all of the sections of the Association shall be put in a position of maximum efficiency and would be glad to favor any changes which the mature judgment of your Committee deems advisable.

Now, as I look at it from my point of view, one of the many objects in giving to state associations exclusive control of the House of Delegates would be to help stem the tide of this spirit of iconoclasm.

It would seem to me that we should not ignore the right of full representation of the various branches of the A. Ph. A. now distributed over the United States. These branches should be encouraged just as the American Chemical Society encourages its various branches. I may say incidentally, that I have been trying to start a branch of the A. Ph. A. in Kansas City for a number of years and have made some progress in that direction and am in hopes that in the course of another year I may be able to secure this."

Dr. F. E. Stewart, loyal pharmacist and expert in patent and copyright laws, comments:

"You will remember that Prof. J. U. Lloyd when he was President of the A. Ph. A. advocated a re-organization of the Association for the purpose of limiting its members to retail druggists.

Now, you have gone to the other extreme and are advocating a plan, which, if carried out logically, would place the control of the Association in the hands of the proprietary medicine interests. Am I right about this? . . . I am wondering just what argument you are using in your own mind to justify you in opening the door of the A. Ph. A. to everybody."

F. W. Nitardy, Denver, Ex-Chairman of the Practical Pharmacy and Dispensing Section, A. Ph. A., writes:

"Received your paper in regard to the House of Delegates of the A. Ph. A. and wish to say, I am in hearty accord with your suggestion and hope you and your Committee will succeed in making this proposition a reality."

Prof. Charles H. La Wall, Philadelphia, always helpful, tersely lends his endorsement:

"Your recent communication was received and I heartily endorse the plan proposed therein."

Judge Charles M. Woodruff, Detroit, Michigan, Secretary and Treasurer of the National Drug Trade Conference, writes:

"I am in entire accord with your view that this House of Delegates should be composed only of delegates from state associations who are members of the American Pharmaceutical Association. I must frankly say, however, that I am not in sympathy with your proposition to organize a National Drug Trade Congress, for it seems to me that the present National Drug Trade Conference, which has done such good work already, fills every want; at least so far as legislation is concerned."

Prof. C. B. Jordan, of the Purdue University, lends encouragement:

"I am heartily in accord with your organizing plan of county, state and national associations similar to the American Medical Association and I sincerely hope that you will be successful in the working out of the plan. If I can be of any assistance to you I will be glad to have you call upon me."

From Secretary W. B. Day:

"I am heartily in favor of the suggestion you make that membership in the House of Delegates be limited to representatives of the State Pharmaceutical Associations who are also to be members of the A. Ph. A.

I believe that this would be a great improvement over the present heterogeneous assemblage. Delegates from the National Association might well be accorded recognition at the general sessions of the Association.

I believe that if your suggestion is adopted, it will do much toward bringing the State Associations into closer affiliation with the A. Ph. A., an object which is well worth an earnest effort to accomplish."

ATTEMPTS AT EXPLANATIONS.

To Dr. Beal and Mr. England: If more than one, single, class of delegates are admitted into the proposed REFORMED House of Delegates, just then will the principle of equal representation be violated and double representation, in many instances, creep in. "Fraternal Delegates" might, by resolution, be heard, but they should not be admitted to membership nor allowed to vote.

It is to be hoped that "SPECIAL" members, such as officers of the A. Ph. A., will not be provided for. The House of Delegates should not represent the A. Ph. A., but it should be a part of the A. Ph. A., in which the pharmacists, broadly described, of the various states, may be represented and EQUALLY represented. There is actually no need of but one kind of delegate for, most fortunately, every other form of local or national association, but the state associations, has orderly representation, either directly or indirectly, in the A. Ph. A. Let us try the restricted form first. Start right and we will *be* right.

To Dr. Kremers: It is not believed that we will be able to induce all individual members of the state associations to become members of the A. Ph. A. before the state associations and their members become more closely associated with the A. Ph. A. and more helpfully interested in it. The acquisition of members from the state associations will be large, but the acquisition will be gradually progressive. No very great increase in membership in the

A. Ph. A. would seem to be possible, excepting through the means of some sort of local associations, which will act as feeders to the general body.

To Dr. Wulling: Yours is exactly the conception that promises a reasonably sufficient organization of pan-pharmacy.

To Dr. Koch: There is not the slightest doubt, in the minds of those who have given the subject thorough study, but that right now, interesting and profitable programs for the next five years can be easily mapped out, such programs as will keep a properly formed house of delegates busy one full day or longer each year. Two such programs are submitted herewith.

To Mr. Mittelbach: Unfortunately, your conception of the A. Ph. A., its scope and possibilities, is such as was properly held by its most loyal members fifty years ago. The opposition to attaching the state associations to the A. Ph. A. is the opposition, if it were possible, to the union of the states into our National Government and such as would be against the acceptance of new states. The proposition to create a general reference committee or of making the House of Delegates a body of general reference, is directly against the prevailing tendency toward specialization. The same principle, followed in our general government, would refer to Congress all those particular matters which are now separately taken care of by the special departments or divisional bureaus. This general reference idea is a distinctly backward step and will rob the specialized sections, of the Association and its especially organized committees of their real and truest missions. The House of Delegates should become a *special* reference body for inter-state subjects, only.

To Dr. Sayre: Personal explanations have been made to you, which have no general interest. Your suggestion that the local branches have representation in the House of Delegates is answered in the Chairman's original communication. The local branches have full and unusual representation in the Council. Should they also be represented in the House of Delegates, they would be given undue power and unwarranted importance and the members of these, who are, in nearly every instance, it is believed, also members of their state association, would have double representation in the House of Delegates, which would be, obviously, unfair.

To Dr. F. E. Stewart: The true stamp of humanity is seen upon you when it is discovered that you CAN, sometimes, go wrong. Evidently you have not been nor are now well acquainted with the prevailing conditions, as they relate, especially, to the personnel of the membership of the A. Ph. A. It is much more catholic, as it should be, than you seem to know. You are advised to get acquainted with the members and discover their peculiar lines of action. The door has been WIDE open, FORTUNATELY, for many years. Pharmacy is a mixture and we must accept it as such, trying, always, to improve the character of the component parts.

To Judge Woodruff, Mr. Nitardy, Prof. La Wall, Prof. Jordan and Prof. Day: You and all who have favored the committee with comments, are heartily thanked for your helpful co-operation. Your continued interest is needed and earnestly solicited. The subject should be patiently discussed at all state association meetings and careful conclusions developed.

SUGGESTED PROGRAM FOR THE HOUSE OF DELEGATES 1915 MEETING.

MORNING.

Presidential Address—Subject: The history of pharmaceutical organization in the United States, with reference to its development consistent with specialization in pharmacy, as well as with the growth and the betterment of the country.

Address—The Correlation of 48 State Associations and its Possibilities.

Report of the Committee on Credentials.

Resolutions and Subjects for Discussion, offered by the several delegates, with comments. All to be referred to a special committee for arrangement and presentation.

AFTERNOON.

Report of Special Committee appointed "To investigate the House of Delegates and to see if its usefulness could not be improved," with presentation of amendments to the by-laws to be discussed and acted upon at the next session.

A Symposium—How far can state laws, applying to pharmacy, be made to conform to similar National laws and would such an agreement make uniform state laws?

(a) Pure Food and Drugs Laws.
(b) Anti-Narcotic Laws.
(c) Poison and "Bichloride" Laws.
(d) Labeling and Weights and Measures Laws.

Report of committee appointed to arrange and present resolutions and subjects for discussion. Discussion of such as are presented.

EVENING.

Unfinished business, communications.

A Symposium—Would the establishment of a system of legalized dispensing service fees, as now prevails in Germany, be helpful to the pharmacists of America? Also, would the practice of making a distinct charge for dispensing services and a distinct cost charge for merchandise tend to give the pharmacist better professional standing?

MORNING.

Presidential Address—Subject: Embracing a report of the progress made in correlating the state associations and recommendations for the betterment of prevailing conditions.

Address—Why all members of the state associations should also become members of the American Pharmaceutical Association, reciting the benefits to follow this completed membership.

Report of the committee on credentials.

Resolutions and Subjects for Discussion offered by the several delegates, with comments. All to be referred to a special committee for arrangement and presentation.

AFTERNOON.

Report of Committee on Uniform State and National Laws. And a discussion of the forms of laws presented by the Committee.

The existing relationship in the several states between the medical and pharmaceutical professions. Suggestions for the betterment of such conditions.

Report of committee appointed to arrange and present resolutions and subjects for discussion. Discussion of such as are presented.

EVENING.

Unfinished business, communications.

A Symposium—The advantages to accrue to retail pharmacists from co-operating with other retail merchants and from taking part in retail merchants associations or bureaus, also reporting of "smart things" done by some of the state associations that might be helpful to others.

Form of resolution that may be discussed at state association meeting:

WHEREAS, The correlation of the state associations and their attachment to the A. Ph. A. would greatly enlarge the scope and increase the usefulness of the several state associations and would also increase the strength and influence of the American Pharmaceutical Association; and

WHEREAS, Such correlating and attachment would be in line with the progress of the times and consistent with all forms of effective organization; therefore, be it

Resolved, That this Association in convention assembled does hereby endorse the proposition to make the House of Delegates a body composed exclusively of representatives of the state associations; and be it

Further Resolved, That the delegates of this Association are hereby instructed to lend all the assistance in their power toward the formation of a House of Delegates composed of state association representatives, only.

Respectfully submitted,

HENRY P. HYNSON, Chairman.

A FEW ABSTRACTS OF SUBJECTS PERTAINING TO PRACTICAL PHARMACY OF THE CURRENT YEAR, EVIDENCING THE VALUE OF THE JOURNAL OF THE A. PH. A. TO THE RETAIL DRUGGIST.*

CHESTER A. DUNCAN, P. D., DALLAS.



The following abstracts have been taken from the Journal of The American Pharmaceutical Association, beginning with the issue of January, 1914:

THE MAKING OF TABLETS BY THE RETAIL DRUGGIST.

BERNARD FANTUS, M. D.

There are three influences at work destined to change the relation of the retail druggist to the tablet; they are: First, the use of solid fat as a cohesive and lubricant; second, candy medication; third, inexpensive tablet machines.

The value of cacao butter and low-melting point paraffin as cohesives and lubricants are discussed, these agents making it possible for the retail druggist to include tablets along with pills and capsules as extemporaneous products. The increasing demand for sweet tablets and the large number of drugs that can be dispensed in this manner offers a practical opportunity for extemporaneous preparation. Cheap and efficient machines for tablet making are available.

The author's conclusion being that it would pay pharmacists to equip themselves with a tablet machine, discontinue carrying in stock a large number of miscellaneous tablets and that he will be able to prepare sweet tablets as a form of candy medicine that physicians will readily take up as soon as a reliable source of supply has been secured. January, 1914.

SYRUP OF FERROUS IODIDE.

W. C. ALPERS, SC. D.

As the result of a large number of experiments the presence of a catalyzer, as a coil of bright iron wire, controls the violence of the reaction. Neither invert sugar nor glucose are preferable to granulated sugar. When made from best ingredients does not need a preservative. When dispensed in bottles that will be opened several times a day, the addition of one-half of one percent of citric acid is advisable, provided the quantity will be consumed in thirty days. The slight change in color during the prescribed time is negligible. March, 1914.

A NEW AND SATISFACTORY FORMULA FOR LIQUOR ANTISEPTICUS.

CHARLES H. LAWALL, PH. M.

The pharmacopœial preparation has been criticized and justly so for being harsh and an unpleasant preparation. A formula is presented which is the result of numerous experiments: Eucalyptol, 5.0 cc., Methyl Salicylate, 1.2 cc., Oil thyme (white) 0.3 cc., Thymol, 1.0 gm., Menthol, 1.0 gm., Sodium salicylate, 1.2 gm., Sodium benzoate, 6.0 gm., Boric acid, 25.0 gm., Fluidextract golden seal, 2.0 gm., Alcohol, 300.0 cc., Water, q. s. to make, 1000.0 cc Make the solution according to the art of the pharmacist, reserving 60.0 cc. of the alcohol to add to the clear filtrate. Kieselguhr or talc may be used as a filtering medium. April, 1914.

A NEW AND SATISFACTORY FORMULA FOR LIQUOR ANTISEPTICUS ALKALINUS.

CHARLES H. LAWALL, PH. M.

The N. F. preparation is unnecessarily high in solids and alkalinity. The formula submitted consists of: Sodium bicarbonate, 5.0 gm., Sodium benzoate, 10.0 gm., Sodium sali-

*Read at recent meeting of Texas Pharmaceutical Association. The object of the paper is evident. The reprinting is for the purpose of suggesting to other members a means for enlisting an interest in those who are not members of the American Pharmaceutical Association.

cylate, 10.0 gm., Sodium borate, 30.0 gm., Thymol, 0.2 gm., Menthol, 0.2 gm., Eucalyptol, 0.2 gm., Methyl salicylate, 0.2 gm., Alcohol, 40.0 cc., Glycerin, 150.0 cc., Water, q. s. to make 1000.0 cc. To color, red cudbear may be used, or a more resistant color which will not bleach out so quickly with hydrogen dioxide solution, the color known as vegetable red, which is sulphonated orcin, may be used. April, 1914.

LOTIO ALBA.

OTTO RAUBENHEIMER, PH. G.

The author calls attention to the hospital preparation of zinc oxide, solution lead subacetate, glycerin and lime water. This preparation is not intended to be used against acne, pimples, etc., Lotio Alba being composed of zinc sulphate, sulphurated potash of each 5.0 gm. and water or rose water 125.0 cc. The composition of sulphurated potash is discussed, as the value of Lotio Alba depends upon its strength.

Difficulties arising in having this preparation properly prepared suggests the precautions of filtration of separate solutions of zinc and potassa, finely divided precipitate by dilute solutions slowly pouring the potassa solution into the zinc solution with agitation. The pharmacist can prepare small quantities of sulphurated potash and although an unstable chemical is very stable in solution and it is recommended that this be kept as a stock solution for making Lotio Alba. May, 1914.

THE LINIMENTS OF THE U. S. P. AND N. F.

THOMAS LATHAM.

Comments and suggested formulæ.

Linimentum Ammoniæ to consist of ammonia water, liquid paraffin oil and oleic acid.

Linimentum Belladonnæ, camphor decreased to 37.5 gm. with the addition of Linimentum Saponis.

Linimentum Calcis, the lime water to be of the best and placed in the bottle first.

Linimentum Camphoræ, yellow paraffin oil to replace the cotton seed oil.

Linimentum Chloroformi, replaces the present formula with one consisting of chloroform and methyl salicylate in paraffin oil.

Linimentum Saponis, directs that this be made by solution of soap in alcohol and adding other ingredients.

Linimentum Saponis Mollis, methyl salicylate to replace the oil of lavender flowers.

Linimentum Terebinthinæ, petrolatum to replace rosin cerate as diluent for oil of turpentine.

Linimentum Aconiti et Chloroformi, N. F., can be improved by adding menthol.

Linimentum Ammonii Iodidi, N. F., present formula replaced by ammonium iodide in soap liniment.

Linimentum Iodi, N. F., considered obsolete.

Linimentum Opii Compositum, N. F., on account of the high price and comparative uselessness of tincture of opium and oil of peppermint the former is reduced from 100 cc. to 10 cc., and the latter replaced by menthol. Tincture of arnica, saponin and linseed oil are added.

Linimentum Saponato-Camphoratum, N. F., soap liniment has taken its place. White laundry soap may be used in making, as it congeals readily.

Linimentum Terebinthinæ Aceticum, N. F., the formula slightly modified as to quantities and saponin added.

Formulæ are also given for Analgesic Liquid Balm, University Rub, Boston Liniment or Veterinary Liniment. February, 1914.

A NOTE ON THE VALUE OF PRESERVATIVES IN SYRUP FERROUS IODIDE.

GEORGE M. BERINGER, PH. M.

Tartaric and citric acids in one tenth of one percent solution, serve well as preservatives. If carefully made no preservative is needed. However, to overcome careless manipulation it is deemed advisable to use a preservative. Hypophosphorous acid has the advantage of a reducing value which is not possessed by organic acids. It has the disadvantage that in the strength recommended it will act upon sugar and darken the syrup. This could be overcome

by using glycerin for a portion of the sugar. N. J. Phar. Ass'n., 1914. Jour. A. Ph. A., July, 1914.

MAGMA MAGNESIA, N. F.

SAMUEL T. HENSEL, PH. G.

The formula of George M. Beringer is changed in that a larger excess of sodium hydroxide is used to insure complete chemical reaction, the solution of the magnesium sulphate poured into the soda solution as directed in the Beringer formula and in addition the mixed solutions and precipitate are boiled for fifteen minutes. Artesian water used for washing the precipitate instead of distilled water as each gallon of precipitate requires about twenty-five gallons of water for washing. The need for a larger quantity of soda being explained by the peculiarities of mass action. August, 1914.

GLYCERITE OF BISMUTH.

WILBUR L. SCOVILLE, PH. G.

A corrected formula and assay process for this product.

The formula is simply a modification of the present one and in order to furnish a product of uniform strength the amount of bismuth is determined before the final quantities of vehicle are added in such proportion that each 100 cc. of product will represent the equivalent of 12.8 gm. of bismuth oxide. The bismuth determination being made by precipitating a measured portion of the glycerite with hydrogen sulphide, washing and weighing the residue. September, 1914.

THE PHARMACY OF ADRENALIN.

C. P. BECKWITH.

The chemistry of this sensitive substance is explained, being characterized as an amine base, an alcohol and a phenol. The solubility of the pure substance is given. It forms salts with acids which are usually very hygroscopic and difficult to preserve in dry form. Solution of these in alcohol or water being the usual manner of dispensing. The commercial solution being a solution of 3 to 1000 adrenalin chloride in physiological salt solution with one-half of one percent chloretone. This retains its activity for a long time if stored away from heat, light and air. Oxidizes on exposure to air as indicated by the change in color from pink to red and then to brown with a brown precipitate. As long as the undiluted commercial solution has not become deeper in shade than pink the loss of activity is practically negligible.

It is advised that adrenalin be dispensed alone and not in mixture. Incompatibilities mentioned are, alkalies and oxidizing agents are chiefly to be feared. In this category are such substances as oxygen, chlorine, bromine, iodine and their oxyacids, permanganates, chromates, nitrates and salts of readily reducible metals. Iron even in traces must be avoided and because of its distribution is extremely troublesome. Nose and throat specialists order spray solutions containing alkalies which if dispensed will render the adrenalin inert. In making dilute solutions sufficient hydrochloric acid should be added in such proportion that the total volume will contain one one-hundredth of one percent acid. November, 1914.

A FORMULA FOR A NEW TYPE OF SALINE ANTISEPTIC SOLUTION.

CHARLES H. LAWALL, PH. M.

Recommended as an alkaline and saline solution containing but little alcohol. Consisting of Sodium chloride, 5.0 gm., Sodium borate, 5.0 gm., Sodium bicarbonate, 10.0 gm., Oil of spearmint, 1.0 cc., Oil of eucalyptus, 0.5 cc., Menthol, 0.1 gm., Alcohol, 5.0 cc., Fluidextract of hydrastis (aqueous) 2.0 cc., Water, q. s. to make 1000.0 cc. Disolve the salts in 750.0 cc. of water and the oil and menthol in the alcohol. Mix the alcoholic solution of oils with 5.0 gm., of magnesium carbonate and triturate gradually with the aqueous solution. Filter and add the fluidextract and finally pass enough water through the filter to make 1000.0 cc February, 1915.

IODINE OINTMENT—DATA AND METHOD OF ASSAY.

LEO. H. FRIED, PH. G., PHAR. D.

A method of assay for this ointment is given together with a report as to observations made concerning the absorption of iodine by the lard. Immediately after making, assay

showed 1.11 percent loss of free iodine. At ten days 1.16 percent and at eight months 1.20 percent. The maximum absorption taking place in ten days. May, 1915.

NEW METHOD OF MAKING SYRUPUS HYPOPHOSPHITUM AND SYRUPUS HYPOPHOSPHITUM COMPOSITUS.

F. A. UPSHER SMITH, PH. C.

These new formulæ are proposed with the view that it will be unnecessary for the druggist to carry in stock but one of the hypophosphites, namely calcium hypophosphite, the other hypophosphites are made in the process by reaction of potassium, sodium, iron and manganese sulphates, upon the calcium salt in molecular proportions necessary to form the corresponding hypophosphites, an excess of the calcium salt being used sufficient to represent the correct amount in the finished product. Minn. State Phar. Ass'n., Jour. A. Ph. A., May, 1915.

AMPULS.

HERMAN H. NORTH, PH. G.

Evolution of the word, history and forms, glass used and tests, manufacture and cleansing empty ampuls, methods of filling by gravity, pressure, vacuum, testing the sealing, sterilization, solutions decomposed and those not decomposed by heat, are the paragraph headings of a meritorious thesis and worthy of every practical pharmacist's attention. May, 1915.

CURRENT REVIEW OF PHARMACEUTICAL JOURNALS FOR APRIL, 1915.*

J. W. ENGLAND.

THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Preliminary Note on a New Pharmacodynamic Assay Method, by Paul S. Pittenger, Phar. D., and Charles E. Vanderkleed, Phar. D. The authors propose the use of Carassius Auratus (Gold Fish) as test animals for the digitalis series of drugs, claiming that gold fish are exceedingly sensitive to variations, that the weight of the fish may be disregarded in making the test, that the individual variations in the susceptibility is much less than that of guinea pigs and frogs, and that the gold fish method is the simplest so far proposed and can be easily carried out by those not skilled in pharmacodynamic work. Furthermore, the animals can be procured at all seasons of the year and are inexpensive.

Examination of Calycanthus Floridus for Alkaloids, by E. R. Miller and H. W. Brooks. The results obtained make it probable that the plant, which is widely found in the Southeastern States, contains alkaloids.

The Analysis of Cigarettes, Cigars and Tobacco, and the Use of Lloyd's Reagent in the Determination of Nicotine, by Azor Thurston. A comprehensive series of analyses of twenty-six brands of cigarettes, both filler and paper.

Estimation of Calomel, by R. I. Grantham. Three methods were studied, the third one yielding the highest theoretical results.

Some Factors in Drug Absorption in Frogs, by W. F. Baker, M. S., M. D. A paper showing the variation in individuality of frogs with reference to drug absorption. The matter of absorption is largely due to the health of the frogs and the conditions under which they are kept.

Stillingia Sylvatica, by E. R. Miller, R. I. Brooks and C. P. Rutledge. A study of the root of Stillingia Sylvatica, with especial reference to the presence of the alkaloid stillingine.

Cannabis Sativa, by H. C. Hamilton, M. S. The author discusses the question, "Is the medicinal value of the drug found only in the Indian grown products?" and he concludes

* Read before Philadelphia Branch, May 11, 1915.

that American Hemp contains the same active ingredients as Indian Hemp, and that, if equal care is used in selecting the proper part of the drug for experiments, no material difference in activity will be found between the extracts of Indian and of American Hemp.

Estimation of Yellow Phosphorus, by H. Engelhardt and O. E. Winters. Methods for the determination of Phosphorus in Phosphorus Resin, Phosphorus Paste, Phosphorus Pills and Elixir of Phosphorus.

Pharmaceutical Education, by Frank R. Eldred. A study of methods of training for special branches of pharmaceutical work, with special reference to the requirements of modern pharmaceutical manufacturing and drug inspection.

Pharmaceutical Education, or the Education of the Pharmacist; Which Shall it be?" by Jacob Diner. A study of education as related to pharmacy and the pharmacists, differentiating between the education of the pharmacist and pharmaceutical education.

Forty-five Years of Manufacturing Pharmacy, by Frank O. Taylor. A sketch of the history of manufacturing pharmacy of this country, with special reference to the development of Parke, Davis & Co.

The Study of the History of Pharmacy by Students of Pharmacy at American Institutions of Learning, by Edward Kremers. An important paper upon the scope of the courses and the methods of instruction of historical pharmacy, with a plea for greater attention by schools of pharmacy to the subject.

Mineral Waters, by Julius Greyer. An able and comprehensive paper on this subject.

Restrictions in the Distribution of Poisons, by Carl T. Buehler, Ph. G. The author proposes two schedules of poisons, one to be sold on a physician's prescription only, and the other not, but to be recorded in a poison register.

Should the Retail Druggist Manufacture His Own Preparations, or Buy Them? by Charles J. Clayton. The author discusses the subject pro and con, believing that there are two sides to the question.

Some Pharmaceutical Notes, by William R. White, Ph. C. A series of practical notes on Oleate of Mercury, Spirit of Nitrous Ether and Fowler's Solution.

Difficult Prescriptions, by J. Leon Lascoff, Phar. D. A study of seven prescriptions with methods of preparation.

Red Gum, by John K. Thum. A valuable, practical paper on this useful astringent.

Pharmacopoeias and Formularies of the World, by R. H. Needham. An important list of Pharmacopœias and Formularies published both in the United States and abroad.

Further Facts About Drug Importations, by Harry B. French, President of the Smith, Kline & French Co. An appeal for an amendment of the Federal Food and Drugs Act to protect the importer of drugs against certain acts perpetrated at the present time by the officials of the Government of the United States at ports of entry, and for the purpose of correcting inequalities of administration of the different ports.

Professional Pharmacy from the Viewpoint of the Commercial Laboratory, by Frank E. Stewart, Ph. G., M. D. A plea for co-operative work between the great commercial houses engaged in pharmacal and chemical industries and the medical profession, through its universities, laboratories, hospitals and clinics.

The House of Delegates of the A. Ph. A., by Prof. Henry P. Hynson. An exceedingly important communication urging a general discussion of the functions of the House of Delegates of the American Pharmaceutical Association and inviting suggestions regarding its betterment

The Percentage of Moisture Lost in the Preparation of Some Official and Unofficial Drugs, by Edwin L. Newcomb, P. D. A valuable compilation of data concerning the moisture lost in the drying of vegetable drugs.

A Criticism of the United States Pharmacopoeial Descriptions of Vegetable Drugs, by Chalmers Joseph Zufall.

The Women's Section and Women Pharmacists, by Zada M. Cooper. A plea for the growth and development of the Women's Section of the American Pharmaceutical Association and the more extended employment of women in pharmaceutical work.

AMERICAN JOURNAL OF PHARMACY.

The Qualitative Separation and Identification of Some Oxymethylanthraquinones, by E. Monroe Bailey. A study of the color principles of Senna, Rhubarb, Aloes and the various species of Buckthorn.

Standardization of Sodium Thiosulphate Volumetric Solution, by Joseph L. Mayer.

AMERICAN DRUGGIST.

Solving the Coal Tar Derivative Problem.—An editorial upon a subject which is exercising the deep interest of the American chemical industries of this country.

Advertising an Ethical Drug Store, by J. R. Moffett. An interesting chat upon the ethical conduct of the drug business.

How to Sell Disinfectants Over the Counter, by John Zeig, M. D. A practical paper on this important subject.

Pharmacy and Pharmacists, by John F. Patton. A brief and interesting paper by John F. Patton of York, Pa., a fine type of the old-time pharmacist and a former President of the American Pharmaceutical Association.

THE DRUGGISTS' CIRCULAR.

The New British Pharmacopoeia, by H. H. Rusby, M. D. In this paper Dr. Rusby discusses with characteristic ability the salient features of the new British Pharmacopœia pertaining to vegetable drugs.

Skin Foods and Toilet Cream, by H. C. Bradford. A practical paper on this subject.

MERCK'S REPORT.

Perfumery and the Chemist, by Edward T. Heiser. A study of synthetic perfumes, the author predicting that the time will not be distant when the flower scents will be all synthetical perfumes. "The florist of tomorrow will be the chemist; the garden will be the laboratory; and in crystalline form, among coal-tar stills and complex pots, we shall gather, 'Roses red and Violets blue, and all the sweetest flowers that in the forest grew.'"

THE JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY.

Symposium on the Contributions of the Chemist to American Industries.—An exceedingly important collection of papers, covering but a few of the industries benefited by the science of chemistry, but they bring into strong relief the growing importance of the services of the industrial chemist and chemical engineer. The papers are too long to abstract, and should be read in the original.

THE JOURNAL OF BIOLOGICAL CHEMISTRY.

Human Milk, by Alfred W. Bosworth. An important study upon the acidity of human milk, the serum of human milk and the principal compounds of human milk.

The Estimation of Fat, by Helman Rosenthal and P. F. Trowbridge. A new method for the determination of fat in animals and food stuffs by means of a method of saponification. The method is so accurate that it can be used for the determination of fat in blood, which is not possible with the usual methods.

THE PERFUMERY AND ESSENTIAL OIL RECORD.

The number includes as usual a full market report. While synthetic chemicals for perfumery are generally very scarce, and command high prices, there is also a notable shortage in several essential oils; otherwise the most interesting feature of the report is the firming up towards the close of the Sicilian essences and the strained conditions between growers and dealers in both American peppermint and French lavender oils.

The Little Green Devil (Absinthe).—A remarkably interesting article upon a weed that for thirty centuries or more has been a type of all that was bitter, that has brought tens of thousands to a maniac's grave, and, incidentally, not a few into sounder health, that has inspired a novel by Miss Marie Corelli and given its name to a London suburb and convict prison. Since the present European war broke out the drinking of absinthe in both the French army and navy has been effectually stamped out, while the Government has supplemented the effort by absolute prohibition of the sale. According to published figures "absinthe ordinarie" contains 47.6 percent of alcohol, "absinthe demi-fine" 50 percent, "absinthe

fine" 68 percent, "absinthe Suisse" 80.6 percent, and in addition to the volatile and bitter constituents of wormwood herb, these liquors contain angelica, anise and marjoram. The bright green tint of the alcoholic extract is intensified by admixture of spinach or parsley, and then toned down to a dull olive green by the addition of burnt sugar, but it is to be feared that the desirable tint of the "little green devil" is frequently obtained by mixtures of indigo and turmeric, and even by acetate or sulphate of copper and green aniline dyes. With national prohibition of absinthe in France has passed away that Parisian function, the "absinthe hour," somewhere between 4 and 6 p. m., and with it the groups of idlers, moodily gazing into the opalescent depths of the seductive poison, diluted with water. The symptoms are quite distinct from ordinary alcoholism. Absinthe appears to act directly through the higher nerve-centers, nervous symptoms being the most prominent throughout. The exhilaration first experienced passes into hallucinations, nocturnal restlessness and terrifying dreams, followed next morning by nausea and vomiting, trembling of the hands and tongue, with dizziness and general unfitness. The final condition of the victim is delirium, epileptiform convulsions and hopeless idiocy. Wormwood herb can scarcely be passed over as an unimportant herb. The yield of essential oil is from 0.2 to 0.97 percent, with a specific gravity of 0.925 to 0.955 and a refractive index of 1.460 to 1.474; the chemical constituents being thujone, thujyl alcohol, acetic, isovaleric and palmitic esters, pinene, phellandrene and cadinene.

Insects Injurious to Plants, by E. M. Holmes, F. L. S., F. E. S. A continuation of Curator Holme's very interesting article on this subject from previous issues.

THE PHARMACEUTICAL JOURNAL AND PHARMACIST.

Practical Notes on the British Pharmacopoeia, 1914, by David Gilmore. This is chiefly a report on the standards of the British Pharmacopœia for Laudanum, Spirit of Nitrous Ether and Glycerite of Oleic Acid.

A New Color Reaction for Salicylic Acid," by P. A. W. Self, B. Sc., F. I. C. The author uses equal parts by volume of 40 percent formaldehyde and concentrated sulphuric acid, cooling the mixture thoroughly. Next, moisten the substance to be tested, in a porcelain dish, with the above mixture, add a little ammonium vanadate, and stir well. If salicylic acid is present a Prussian blue color—varying in intensity with the amount of salicylic acid—appears immediately, and rapidly changes, first to a greenish blue and finally to green. If, however, no salicylic acid (or other substance capable of yielding a color reaction) is present, the color given by the reagents alone is a yellowish red or orange, which after two or three minutes begins to change to greenish yellow and finally becomes green. With 1 milligramme of salicylic acid the color is intense.

Notes on the British Pharmacopoeia, 1914, by C. W. Kemsey-Bourne, M. P. S.

Pharmacopoeia Revision, by William Kirkby, M. Sc., F. C. S., Ph. C. An excellent review of the subject of Pharmacopœias in addition to the present British Pharmacopœia. The author in his researches goes back to the sixteenth century and notes many curious facts in pharmaceutical literature. Between 1618 and 1851, when the last revision of the Pharmacopœia Londinensis appeared, there were nine revisions of it. The years when these were published were 1650, 1677, 1721, 1746, 1748, 1809, 1824, 1836, 1851. But in all there were over thirty reprints and editorials. The amount of original matter in this publication throughout the first century of its existence seems to have been quite meagre. The first issue, and subsequent ones down to 1746, consisted chiefly of matter extracted from the Antidotarium of Nicolaus de Salerno (twelfth century) and the Antidotarium of Johannes Damascenus (John Mesué, ninth century). The apothecaries before the appearance of the official medicine book, depended largely upon Serapion, Dioscorides, Galen, Paracelsus, as well as upon Mesué, Avicenna, and Nicolas. The generally unsatisfactory character of the pharmacopœia and the attitude of the physicians toward unlicensed practitioners led to the appearance of quite a large number of non-official books. Many of these are of considerable interest, because they furnished an extensive reservoir from which the editors of the London Pharmacopœia were able to draw when they decided to put together a discriminatory edition. This was the issue of 1746. The books which appeared during the previous hundred years are worthy of attention. There were commentaries on the Pharmacopœia, such as Salmon's

and Quincy's, formularies such as Radcliffe's, the so-called Pharmacopœia Bateana, Woodall's Surgeon's Mate, Schroeder's Pharmacopœia Medico-Chymica, Culpepper's English Physician Enlarged, and many similar books. Some of these were compendiums of almost everything in physic and surgery. In Woodall's Surgeon's Mate (1639) we even find poetry, of which some may make an appeal to pharmacists of today. At the conclusion of some verses called:

Certaine Chimicall Verses; or Good Will to Young Artists, From the Author,

he says:

Common it is with Chymists true
their house-doves them withstand:
Fearing all will be spent in smoke,
time, goods, yea house and land.

A noyse domesticke shrill I hear,
and I dare stay no longer:
Good friends adieu till further time,
I must obey the stronger.

You Chymists wise that wived are,
be warned here by me,
Search not into this mysterie
except your female gree.

For I have found to my great smart,
when she list to contend,
Then down goes pot, yea, glass and all,
and I vow to amend.

And need sayes yeeld, there's fault in him
that stubbornly stands out
Till breech and jacket all be torne
by searching secrets out.

The author concludes his article with an earnest plea that pharmacists be represented upon the Council publishing the British Pharmacopœia.



Panama-Pacific International Exposition.

SUGGESTIONS FOR A COURSE IN MICRO-ANALYSIS AND BACTERIOLOGY FOR COLLEGES OF PHARMACY.

ALBERT SCHNEIDER.



At the Detroit meeting of the American Conference of Pharmaceutical Faculties the writer made the following suggestion in the presidential address to the Conference, "That immediate steps be taken to arrange a course in pharmaceutical bacteriology (including sterilization, disinfection and zymology) and sanitation." In harmony with the thought expressed, the following detailed outline of courses is hereby submitted. This outline is based upon the work as carried out at the California College of Pharmacy where these branches of study have been taught for a period of five years to the students taking the regular third-year course. To complete such courses in one year, certain preparation is necessary, as the regular work in the microscopical examination of vegetable drugs and other vegetable substances, and a general course in bacteriology as is given in the regular two-year course in many of the leading colleges of pharmacy. The courses are to be suitably adapted to the correlated courses in chemistry, so arranging the apportionment of the time that twelve hours per week will fall to the work in microscopy and bacteriology and twelve hours to chemistry. The proposed courses, suitably modified and adapted, should also be added to the curriculum of Public Health courses in Medical Colleges and in Universities.

The outline is submitted in the hope that it will receive the attention of all instructors in Colleges of Pharmacy, and Colleges of Medicine and in Universities, who are interested in public health work. Comments and criticisms are solicited.

Part I—Microscopical.—The microscopical examination of fiber foods and drugs.

A laboratory course of four hours each week extending throughout the college year, supplemented by lectures, reviews and special reading and seminar work. The details of the course vary somewhat from year to year. The micro-analytical methods employed in the examination of foods and drugs are similar to those of the U. S. Food and Drugs laboratories, with desirable additions and changes.

I. Examination of Fiber.

1. Vegetable Fiber.
 a. Cotton.
 b. Paste Board. Wrapping Paper. Tissue Paper.
 c. Newspaper, filter paper, etc.
 d. Book-paper, Banknote, etc.
 e. Writing Paper.
 f. Cordage, thread, etc.
 g. Cotton cloth. Mercerized Cotton Cloth.
 h. Hemp Fiber and Cloth.
 i. Linen Cloth. Linen tester.

2. Animal Fiber.
 a. Human hair.
 b. Hair of other animals. Wool. Bristle.
 c. Woolen cloth.
 d. Camel's hair. Alpaca. Mohair.
 e. Silk fiber. Silk cloth.
3. Mixed Fiber. Animal and Vegetable.
 a. Government Note. Bank Note.
 b. Felt Paper.
 c. Shoddy.
 d. Mixed cloth (wool and cotton).
4. Inorganic Fiber.
 a. Glass fiber. Glass wool.
 b. Asbestos.

II. Commercial Starches.
1. Corn starch, rice starch, wheat starch.
2. Potato starch, sweet potato starch, banana starch.
3. Arrowroot starches, etc.

III. Dextrins. A comparative study is to be made in order to determine the source of the starch used, the degree and character of dextrinization, etc.

IV. Starch Fillers. A study of starch fillers used in sausage meats.

V. Ice Cream Fillers. Starch, Tragacanth, etc.

VI. Flours and Meals.
1. Cereal Flours. A critical comparative study of wheat, rye, rice and barley grains and the flours made therefrom. Hand gluten test. Bamihl gluten test and Winton modification of the Bamihl test. Processed flour. Bleached flour and chemical test for bleached flour. Polished rice.
2. Oat Meal and Corn Meal. A comparative study. Note the distinct polarizing bands of corn starch.
3. Buckwheat flour. Italian Buckeye meal.
4. Pancake flours. Mixed flours. Making estimates of the percentages of the different flours in the compound or mixture.
5. Banana Flour. Squash meal, etc.

VII. Comparative Study of Brans—wheat, rye, rice, barley, corn. Middlings.

VIII. Cotton Seed Cake. Linseed Cake. A comparative study.

IX. Prepared Starches, Flours and Meals.
1. Spaghetti, macaroni, noodles.
2. Sago, etc.

X. Bread and Pastry. Examined as to the identity of materials used, as to kind of flour used, etc.
1. Breads, biscuits, rolls, etc. Examination as to starch identification, use of mixed flours, absence or presence of yeast cells, etc.
2. Cookies, cakes, "Arrowroot biscuit," etc.

XI. Breakfast Foods. These are to be examined as to material used, ascertaining manner of manufacture and absence or presence of substances declared on the label.
1. Flaked corn and wheat.
2. Rolled oats and wheat. Mixtures. Manner of manufacture. Chinese puffed rice.
3. Puffed rice and wheat.
4. "Cream of wheat," "Carnation mush," etc.
5. Shredded wheat, "Grape nuts," etc.

XII. Baby and Invalid Foods. These are examined as to presence of flours, unaltered starch, as to identity of starch, use of cane or milk sugar, presence of dried milk, casein, etc.

1. Dried milk and casein. Pure and mixed.
2. Starchy baby foods.
3. Horlick's malted milk.
4. Borden's condensed milk. Evaporated milk.
5. Eskay's food.
6. Peptogenic milk powder, etc.

XIII. Spices and Condiments. These are examined as to identity and quality (organoleptic testing) and as to absence or presence of adulterants. Samples are secured in the open market, from grocers and from pharmacists.

1. Capsicums—Hungarian, American, Mexican, etc.
2. Pepper—Black and white. Processed white pepper (bleached).
3. Allspice and allspice stems.
4. Cloves and clove stems. Exhausted cloves.
5. Nutmeg. Mace. Cinnamon.
6. Mustard. Prepared mustards.
7. Herb Condiments—Marjoram, sage, etc.
8. Umbelliferous spices. Curry powders.

XIV. Dairying Products.

1. Milk. A critical comparative study of normal cow's milk, pasteurized milk, boiled milk, evaporated milk and condensed milk, including bacterial content, presence of pus and blood corpuscles, sediment, etc.
2. Sour milk, klabbered milk, buttermilk.
3. Cream. Whole milk. Half milk. Skimmed milk.
4. Butter and butter substitutes.
5. Cheese and cheese parasites.

XV. Home Drinks.

1. Coffee. The normal and roasted bean. Ground coffee. Coffee substitutes. Dekofa. Cereal coffee. A careful study of round coffees and their more common admixtures and adulterants. A study of coffee substitutes as to composition.
2. Teas. Qualities and grades. Government standards and tests. Tea culture in the United States.
 a. Coloring substances. Reed test. West test.
 b. Adulterants. Exhausted tea. Japanese false tea. Foreign leaf, etc.
 c. Tea substitutes.
3. Cocas and Chocolates.
 a. Cocoas and Chocolates. Methods of manufacture.
 b. Cocoa shells.
 c. "Soluble cocoas."
 d. Cocoa butter.
 e. Adulterants.

XVI. Food Products, Vegetable and Animal. Samples are secured from private homes, grocers and canneries. They are examined as to identity, quality and purity and the findings recorded on special report cards. In the examination of these products the polarizer, the micrometer scale, the Thoma-zeiss hemacytometer (Turck ruling) and other necessary apparatus, are used. The Lagerheim sublimation tests for benzoic acid and salicylic acid and the curcuma thread test for boric acid and the starch paper test for sulphurous acid, are used.

1. Canned meats. Canned fish. Anchovy pastes, etc. Examine for mold and bacterial contamination and the presence of preservatives.
2. Sausage meats. Examine for starches and starch fillers, preservatives and coloring substances.

3. Jams and jellies. Examine as to identity, use of green fruit, fruit refuse, preservatives, yeast, bacteria and mold.
4. Catsups and tomato pastes. Examine for preservatives, mold, bacteria and yeast cells, tomato refuse, etc.
5. Preserved and Pickled Fruits. Examine for bacterial and yeast contamination ("Swells" and "Leaks"), for sulphurous acid (bleached fruits), and preservatives.

XVII. Candies. Qualities and grades. These are to be examined for various fillers (starch, flour), nature of coating, coloring substances, impurities, etc.

1. Stick candies. Nut candies.
2. Coated candies. Chocolate candies.
3. Gum drops, cough drops, caramels.
4. Licorice sticks, etc.

XVIII. Vegetable Drugs, Crude and Powdered. Compound Powders, Pills, Tablets, Extracts. Samples are donated by retail and wholesale druggists or purchased in the open market. These are examined as to quality and purity, ash content (including acid insoluble ash), fineness of powder, organoleptic characters, etc., and the findings entered upon special report sheets.

1. Powdered Vegetable Drugs.
2. Compound Powders. Dusting Powders. Face Powders.
3. Cattle powders.
4. Poultry powders.
5. Extracts, solid and fluid.
6. Medicinal Teas.
7. Pills.
8. Tablets.
9. Crude drugs. Pressed herbs.
10. Patent and proprietary preparations of an organic nature.
11. Calomel, Charcoal, Mercury, Sulphur.
12. Pastes, Plasters, Ointments.
13. Snuffs, Tobaccos.
14. Unknowns.

The sequence of the several operations of the complete analysis of a sample of powdered vegetable drug may be given as follows:

1. Noting the condition of the seals of the sample or package. Breaking the seals.
2. Thoroughly mixing the sample. Selecting an average sample.
3. Organoleptic testing (consistency or feel, color, odor, taste).
4. Determining the fineness by means of a suitable nest of sieves.
5. Preliminary examination of the average sample and of the samples upon the different sieves, using pocket lens, tweezers, etc. Organoleptic testing of individual fragments, etc.
6. Special examination (macroscopical and microscopical) of the several portions on the different sieves if thought desirable or necessary.
7. Again mixing the several portions on the several sieves and reducing to uniform fineness, if thought desirable or necessary.
8. Complete and thorough microscopical examination.
9. Ash determination if thought desirable.
10. Acid insoluble ash determination if thought desirable.
11. Special tests if thought desirable.
12. Recording the results of the analysis.

(To be continued.)

Obituary

ALBERT PLAUT.

On June 17, 1915, the remarkable life of this brilliant and highly esteemed member of the drug trade was closed by death.

Coming to the United States with his parents in 1868, when eleven years of age, he was prepared for his life's work by what in these days of long courses of study, would be considered a very inadequate education, viz, a three years' course in a New York public school and one year in the college of the city of New York. He also studied for one term at the New York College of Pharmacy. Mr. Plaut's natural abilities, however, were such that he assimilated knowledge rapidly and whatever he learned, he learned thoroughly, so that with this preliminary education he was able to conduct his large business interests and his various activities in commercial, educational and philanthropic work with the ease and refinement of one who had enjoyed a complete collegiate education.



ALBERT PLAUT

In his fifteenth year he entered the drug business with his father, who was conducting a small jobbing drug business in New York City, and remained with him for five years, but when twenty years of age he found the

opportunity of his life by obtaining a position with Lehn & Fink, who had entered the importing and jobbing drug business three years previously, the firm combining the thorough training of the educated German apothecary in the person of Mr. Lehn, with the knowledge of the wholesale merchandising of drugs obtained by Mr. Fink while in the employ of some of New York's jobbing drug houses.

Albert Plaut rapidly assimilated knowledge from his new employers and applied his natural abilities and enthusiasm for work to their service to such good effect that upon Mr. Lehn's retirement in 1886 he became a member of the firm and twelve years later his brother, Joseph Plaut, who had entered the employ of the firm as credit manager in 1886, succeeded Mr. Fink, the remaining original partner.

During these and the succeeding years Albert Plaut's remarkable aptitude as a drug merchant became highly developed: he largely increased his firm's operations in the importation of drugs and chemicals, bringing in not only articles of large demand, but also new and rare grade remedies, so that, while catering to the requirements of manufacturers and large buyers, he steadily increased his firm's distribution to dispensing pharmacists and the best retail drug trade in all parts of the United States to whom Lehn & Fink became known as a source from which practically all articles in the drug and chemical line, however rare, could be obtained; while in Europe the house of Lehn & Fink was considered one of the most progressive drug firms of the United States.

While Mr. Plaut worked arduously in building-up the wholesale drug business which he brought into such prominence, he found time in his busy life to interest himself in many societies for trade-betterment, educational, social and philanthropic purposes. At meetings of these associations, his geniality made him many friends, while his intimate knowledge of business and readiness in debate always secured for him an interested audience.

In the drug trade he was a member of the National Wholesale Druggists' Association, serving it as chairman of many important committees, his services being recognized in 1912 by his being elected to the highest office in the gift of the Association, its presidency, and he directed the affairs of the Association in this capacity in 1912-1913.

He assisted in forming the Drug Section of the New York Board of Trade and Transportation, in which he always took an active interest; was chairman of the Section in 1903 and a director of the General Board for more than fifteen years.

He was a member of the New York Chamber of Commerce, in which he was the official arbitrator for the drug trade, and was recently elected vice-president of the Merchants' Association of New York.

He became a member of the College of Pharmacy of the City of New York in 1887, served as trustee and chairman of its important Committee on Instruction for nine years; was elected vice-president in 1913, serving as such at the time of his decease.

He was a member of the Committee of Revision of the United States Pharmacopœia, being elected on account of his intimate knowledge of imported drugs and their sources of supply.

He joined the American Pharmaceutical Association in 1894 and the esteem in which he held it will be best shown by quoting his reply to the greetings of the delegates from the Association to the meeting of the National Wholesale Druggists' Association at Dallas (1910) when he spoke as follows:

"The delegates of the American Pharmaceutical Association are always welcome at the meetings of the National Wholesale Druggists' Association, for many reasons; first and chief among these, I place the matter so thoroughly dwelt upon by the president of the American Pharmaceutical Association, viz.: the fact that they uphold the ethics of the profession at whatever cost. We realize that the American Pharmaceutical Association is responsible, more than any other factor, for the high standing which the pharmaceutical profession enjoys in our country today. As Mr. Eberle has stated, many of the members of our Association are members of that Association, but I take this opportunity to urge those who are not members of the American Pharmaceutical Association to join it, and I urge those of our retail friends who have not as yet seen fit to join that Association to become members of it. Anyone who sees the monthly publication issued by the American Pharmaceutical Association must be impressed, cannot help but be im-

pressed, by the good work, the high quality of the work, that is being performed by the Association. It was never more evident to me than at the recent Decennial Congress at Washington, held for the purpose of revising the Pharmacopœia. The representatives sent there by the American Pharmaceutical Association simply swept everything before them. The men whom they selected to do the work of revision are a body of men whom it is impossible to duplicate or equal among all the professions which are interested in the making of a new Pharmacopœia. I was never so deeply impressed before by the high moral tone, the scientific requirements, the technical knowledge brought out in the discussions at Washington, and the subsequent work of the Committee itself has only served to deepen that impression.

My remarks are really an eulogy of the American Pharmaceutical Association and the high standing which the Association enjoys among similar organizations in other lines. In continental Europe, in Germany, in France, in Austria, in Italy, the American Pharmaceutical Association is known, its prominent members are known, its high standing is recognized, and every American who visits foreign pharmacists and foreign laboratories will be surprised to know that frequently these gentlemen are better known in foreign countries than they are among ourselves, and all I can say, in conclusion, is to repeat my invitation that all those who are entitled to do so should join the American Pharmaceutical Association and get those of our employes and customers who are entitled to join, to do likewise."

Mr. Plaut was one of the founders and Vice-President of the Metropolitan Drug Club of New York, was one of the foremost members of the Chemists' Club and chiefly instrumental in obtaining the funds for the construction of its club house. Was an active member of the American Chemical Society and the Society of Chemical Industry. He was also a member of the Drug and Chemical Club, the City Athletic, Freundschaft, Liederkranz, Reform, Harmonie, Lotos, and Automobile Clubs, a number of which he served as officer or trustee.

He was also a member of and generous contributor to the Associated Hebrew Charities, and many other charitable and philanthropic organizations.

Mr. Plaut's generous character was shown by his numerous bequests, among which was $50,000 to employes who had been with him over ten years, $54,000 to educational institutions, hospitals and charitable societies, and $15,000 to the College of Pharmacy of the City of New York to endow a scholarship in memory of his father, to be known as the Isaac Plaut Fund.

Mr. Plaut lost his wife fifteen years ago and is survived by a son Edward and two daughters, Mrs. M. J. Falk and Miss Constance Plaut, who, in mourning their great loss, will be consoled by the knowledge that their lamented father died as he had lived, a citizen of no mean city, a man whose unique, forceful personality and splendid business abilities were known and recognized not only by the drug trade, but also by the leading members of the mercantile community, and who crowded into an all too-short life an amount of active work for the service of his fellows that few men are capable of rendering.

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ALBERT PLAUT.

A TRIBUTE BY W. C. ALPERS, SC. D.

The saying: "De mortuis nil nisi bene" is often put at the head of obituaries of prominent men in order to explain or excuse the then following eulogy. But it is not always necessary to begin notices of this kind with this phrase. In fact, there are cases where this expression becomes a statement of facts, where nothing but good and honorable can be said about the life and works of a departed friend, even if envy or prejudice should look for disapproving words.

Such a man was Albert Plaut. *Our* Albert Plaut, the whole pharmaceutical profession may say. For he was one of the most important, active, influential and honored men of our vocation. Not that he passed through life without enemies or defilers. Far from it. A man of strength, influence and decided character must, of necessity, have enemies. Perhaps it would bespeak less of his strength if he had none. The inscription on a tombstone, "He had no enemies," often appeared to us as a doubtful praise. The weak always fears the strong, the indolent criticises the thinker, the lazy hates the active, the slow envies the successful, the narrow-minded shuns the broad-minded, the miser detests the liberal.

Albert Plaut, too, had such enemies. But far from injuring him, they only added to the high esteem in which the better, the thoughtful, the co-laborers in his many-sided works held him.

But it was not these enemies, it was his friends that mourned at his bier, and he had many of them. Many more than the superficial observer believes. Friends of his successful activity, friends of his sharp and correct judgment, friends of his integrity and honesty, friends of his benevolence, friends of his sincere interest in all matters pharmaceutical, friends of his sacrificing heart.

There are two ways to recognize and judge men of importance. From a distance we may observe them, or in the close intimate circle of friendship. In our ordinary daily life all good men are more or less equal. Each one goes willingly to his work, performs the expected task, earns his bread by the sweat of his brow and goes home contented and hopeful. But when serious times approach, when the weight of events demands stronger shoulders, when the call for talent is heralded through the land, it is then that a giant suddenly towers above the masses. Without wishing or knowing it, the destined one is elected leader, or he breaks through to the front obeying his convictions. More than once when powerful commercial crises threatened did Albert Plaut take the lead. With a sharp look into the future he combined the correctness of quick logical thought. Therefore his advice was sought for and respected. Therefore he occupied the highest and most responsible positions in the societies of his calling. He was a power for action, a force for good. Thus he appeared from a distance, a giant in enterprise, in mind, in influence.

But whoever knew him more intimately, who had the privilege of casting a glance into his heart, would respect him still higher, and the esteem would grow to admiration, to intimate friendship. The world may justly praise Albert Plaut as an active, careful, prudent business man to whom rich compensation flowed as a just recognition of his abilities. But only few know that the acquisition of wealth was not the object of his life. He soared for higher aims. To him money was only the means to do larger and better things. The long list of benevolent societies, more than thirty in number, to which he left legacies, gives testimony of his benevolent mind and liberal hand. And yet, this is the smallest part of the blessing that he spread among his friends. His sacrificing heart acted without ostentation or flourish of trumpets, and he was always ready to assist the needy or suffering friend. The friend! for he examined carefully the hearts of those that approached him and understood well to distinguish flattery from truth. But whomsoever he had selected as his friend, to him he stuck, defended him against all attacks and helped him willingly and liberally.

For the higher interests of pharmacy Albert Plaut had a warm heart. His participation in the development of the College of Pharmacy of New York is well known and even beyond his death he extended this interest, as the legacy of $15,000 shows. In the circles of professional pharmacy his merits were equally recognized. When at the meeting of the Convention for the Revision of the Pharmacopœia in Washington in 1910 the election of a practical business man became desirable, on account of new laws passed by Congress, all eyes turned to Albert Plaut. He was elected a member of the Committee of Revision unanimously by men who had come from all parts of the United States and were convinced of his ability and reliability.

American pharmacy, in all its branches, commercial, scientific, educational and practical, loses in Albert Plaut one of its best and most devoted members and it will be hard to fill his place. As energetic business man, as sterling man of honor, as liberal benefactor, as advocate of higher pharmaceutical education, as dear, sacrificing friend we will remember him forever.

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Any business, in order to be a permanent success, must have as a guide the ideals which stand for honesty and integrity of the highest order, which is simply right thinking put into acts. Given a man whose every associate, or every employe, knows that he stands for integrity of the highest order and nothing less, and let the actions of that man speak more loudly than any words which he may say, and there you have a nucleus of a successful business; and let us not forget that while falsehood and insincerity may have a very hard crust, truth will, in time, find a weak spot and finally break through.—The Caxton.

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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If the request is made at the time copy is submitted, authors will be furnished reprints by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

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Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

PAPERS FOR THE ISSUES OF AUGUST AND SEPTEMBER.

As the papers that were read at the Detroit meeting of the American Pharmaceutical Association have nearly all been printed, the editor requests that contributions for the succeeding numbers of the Journal be submitted. It is not desired to interfere with the work of the Sections and doubtless papers read at the Branch meetings will contribute largely to our present needs.

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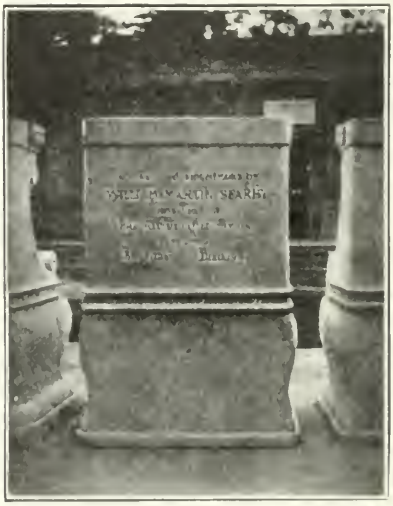
WILLIAM MARTIN SEARBY MEMORIAL.

The Alumni Society of the California College of Pharmacy paid a deserved tribute to the memory of William Martin Searby by presenting to the University of California a marble chair bearing the inscription:

"Dedicated to the memory of
William Martin Searby,
the Father of
Pharmaceutical Education
in the West.
Born 1835. Died 1909."

The ceremonies took place in the Greek Theater of the University at Berkeley, May 16, 1915.

Mr. Searby was elected President of the



Searby Memorial Chair

American Pharmaceutical Association in 1907, presiding at the meeting in Hot Springs (1908). The closing words of his address bear repetition:

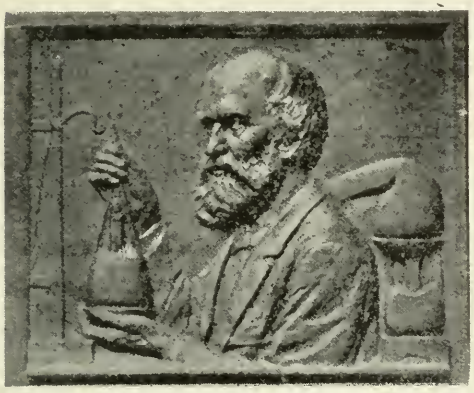
"I ask you to turn your faces to the rising sun; feast your eyes on visions of a brighter

day, towards which we are all working as we seek to promote true pharmacy by education, by legislation and by steady, persistent efforts to develop a scientific, practical and ethical pharmacy."

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TABLET TO THE MEMORY OF DR. DAVID WALDIE.

A bronze portrait medallion tablet has been placed upon the wall of the building occupied by Dr. David Waldie in Linlithgow, England. The sculptor was H. R. Hope-Pinker, Master of the Art Workers' Guild. The tablet bears the following legend:



"DAVID WALDIE.
Surgeon, L. R. C. S. E. and Chemist,
Member of the Asiatic Soc. of Bengal.
B. Linlithgow, 1813. D. Calcutta, 1889.
A Pioneer in Anæsthetic Research.
To him belongs the distinction
Of having been the first to
Recommend and Make Practicable
The Use of Chloroform in the
Alleviation of Human Suffering."

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SOCIETIES AND COLLEGES.

Whenever reports of annual meetings are sent to the editor by the secretaries of the various Associations a brief account is given in these columns in an effort to present the more important events and transactions. The same may be said regarding reports from schools of pharmacy. Space prohibits going into greater detail, but whenever the list of graduates have been sent in, these have been published.

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DR. H. H. RUSBY ARRANGES INTERESTING TOUR TO SAN FRANCISCO.

A Pacific Coast tour of exceptional interest and value has been organized by Dr. H. H. Rusby. The going route is by way of the Canadian Rockies and the return via the Grand Canon. Stops will be made at Niagara, Toronto, Lake-in-the-Woods, where two days will be spent in fishing and touring in motor boats among the islands and along the streams, at Banff, Field and Glacier, in the Selkirks, where special attention will be paid to the alpine flowers among the glaciers, and where long stage rides will be taken among the mountains, at Vancouver, Victoria, Seattle and Portland. Six days will be spent in San Francisco, (Association week), one of which will be devoted to the ascent of Mt. Tamalpais and a visit to the big trees, and on one of which Dr. Burbank will conduct the party to his experimental plantations at Hayward. The next stop is at Los Angeles, whence the party goes to the San Diego Fair. Two days later the party returns to Los Angeles and goes to Long Beach, where the evening will be spent on the beach and among the phosphorescent waves. The following two days will be spent on Santa Catalina in fishing, sailing among the marine gardens and in a stage journey to the summit of the mountains. Returning to Los Angeles the party will leave by the Atchison road for the Grand Canon, spending two days at El Tovar Hotel, and then going to Flagstaff. At the latter place, visits will be made to the Lowell Observatory, where the members are promised a look through the great telescope, and to the caves of the ancient cliff dwellers. Two days will be spent at the petrified forests, whence the party will leave for home. From Las Vegas, some will return via Denver, some by St. Louis and some by Chicago. The journey occupies thirty-seven days, about twelve of which will be spent in transit and the rest at first-class hotels. The total cost, including all the side trips and recreations, and with the exception of meals taken a la carte in the dining car, is three hundred and fifty dollars.

The peculiarly interesting features of the trip lie in the fact that Dr. Rusby explored much of the region to be visited, in the interests of the Smithsonian Institution, before the advent of a railroad and while the country was still really primitive. He has pursued routes into the Grand Canon which are quite unknown to the ordinary traveler and is familiar with the forests and flora. While journeying in the Pullman, he will give many familiar talks on subjects of interest in connection with the places through which the car is passing, discussing such topics as

forestry, irrigation, glaciers, alpine floras, the methods and results of Dr. Burbank's work, the big trees, the origin of the Grand Canon, the perification of forests, methods of exploration and of travel under unusual conditions, etc.

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BULLETIN OF WISCONSIN PHARMACEUTICAL EXPERIMENT STATION.

We have received the Report of the Wisconsin Pharmaceutical Experiment Station. This brief comment is intended to express the satisfaction every pharmacist must have in progressive pharmacy.

The industrial pendulum swings to and fro more rapidly in this country than any other. We recognize opportunities and make use of them speedily, so that often permanent application is impossible because of extreme views. We accept of new discoveries and just as readily discard them. Some insist on the exclusion of nearly all drugs, while others are as emphatic for their retention, in each instance, often with more or less prejudice. Thorough research relative to the production, constitution and action of drugs should decide the question. On this basis the Materia Medica should be restricted, for undoubtedly thorough knowledge of a lesser number will enable the practitioner to be of a greater service. As long as there are thousands of remedial agents employed, so long will the practice of medicine slowly advance and we may expect continued refutation of the efficacy of medicine.

There are other things that hinder the progress of pharmacy, but research work in whatever direction should be encouraged, so we are interested in the report; the establishment of this Pharmaceutical Experiment Station should be exemplary to other states.

Scientific cultivation of drug plants has had the attention of the government and pharmaceutical houses and now if all states will recognize that public welfare is concerned in such experimental work we may hope to develop standardized drugs.

Agricultural Experiment Stations are established in every state and this work is so closely related that the admitted utility of the former at once offers an argument for the promotion of this endeavor, which though not directly of the same commercial importance, has a value seldom calculated in money.

Incidentally, it may be said that the report evidences the sincere purpose of thorough, practical investigation and experimentation, so that results may be utilized industrially. The Bulletin enumerates Wisconsin medicinal plants, contains an interesting article on the cultivation and distillation of wormwood oil in Wisconsin, a chemical study of it by E. R. Miller and one by H. A. Langenhan on the alkaloidal content of stramonium, replete with references.

The Bulletin Board

SAN FRANCISCO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

(August 9-14, 1915)

PROPOSED CHANGE IN THE PROGRAM.

Remember that the Bellevue Hotel, corner Geary and Taylor Streets, San Francisco, is the official headquarters of the A. Ph. A., as announced in the April issue of the Pacific Pharmacist. Make your reservations early and avoid delay on arriving. For the benefit of those who may have overlooked the announcement referred to we repeat it in this issue. The following is the tentative program of meetings and sessions. It has been decided that the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties shall hold their sessions on August 5, 6 and 7, of the week before the meeting of the A. Ph. A. The California College of Pharmacy will entertain the members of the Conference and the sessions of this body will be held at the College Building. The Board of Directors of the College are planning a lunch at the Golden Gate Park Casino, a visit to the Park Museum, a visit to the Museum of Anthropology of the University of California with a lecture by Dr. Kroeber of the department of anthropology of the university. The conference will hold one session on the forenoon of Friday, August 6th, and a second session at 7 p. m. of the same day. If necessary, a third session can be held on Saturday, August 7th.

The National Association of Boards of Pharmacy will hold its sessions on Friday and Saturday, August 6 and 7, and the joint session of the boards, the conference and the section of education and legislation will probably be held on Saturday, August 7th. Mem-

bers of the Association of Boards and of the Conference should take notice of the proposed change and make their headquarter reservations accordingly.

PROGRAM.

(Outline)

For the joint meetings of The National Association of Boards of Pharmacy and The American Conference of Pharmaceutical Faculties to be held Saturday morning, August 7, 1915. (The Saturday preceding the A. Ph. A. convention.)

FIRST SESSION.

President T. A. Miller, presiding. W. A. Teeters and H. C. Christensen, secretaries. Report of the joint committee on time and place of meeting. Chairmen of the joint committees, H. C. Christensen and J. A. Koch. Report of the joint committee on questions and examinations, W. S. Flint and Henry Kraemer. Relationship of local boards with local colleges, Philip Asher and Burton Cassaday.

SECOND SESSION.

President F. J. Wulling, presiding. H. C. Christensen and W. J. Teeters, secretaries. More perfect and beneficial relationship between the boards and the Faculties, R. H. Walker and C. W. Johnson. Prerequisite laws. Their benefits and objections. H. H. Rusby and John Culley. The relationship of the boards and the faculties to the American Pharmaceutical Association. President Mayo, President Miller and President Wulling.

Business referred to the joint session by the boards or the faculties.

If found necessary or advisable, sessions may be held Saturday night, August 7th, and Monday morning, August 9th.

Thursday, August 5th. (Sessions of the National Association of Boards of Pharmacy. The detailed program will be announced later.)

Friday, August 6th. 9:30 a. m. First session of the American Conference at the California College of Pharmacy. 12:30. Luncheon at the Golden Gate Park Casino. 2:00 p. m. Visit to the Park Museum. 3:30 p. m. Second session of the Conference. 7:30. Visit to the Museum of Anthropology and lecture. (The National Association of Boards of Pharmacy contemplates holding sessions on this day.)

Saturday, August 7th. 9:30 a. m. Joint session of the Boards of Pharmacy, the Conference and the Section on Education and Legislation. 2:30 p. m. The Conference may hold a third session. (The afternoon and evening may be devoted to a visit to the Exposition.)

The following is the tentative program of the sixty-third annual meeting of the American Pharamceutical Association for the week of August 9-14, 1915.

Monday—9:00 a. m. Meeting of the Council. 3:00 p. m. First general session. 7:30 p.m. House of Delegates. 8:30 p. m. Meeting of committee on nominations. Meeting of committee on resolutions. 9:30 p. m. President's reception.

Tuesday—9:30 a. m. Second General Session. 2:00 p. m. Scientific Section. Women's Section. Joint Session of Commercial Section and Section on Education and Legislation. 7:30 p. m. Meeting of the Council. House of Delegates. Ladies' Theater Party.

Wednesday—9:30 a. m. Section on Education and Legislation. Commercial Section. 12:30 p. m. Luncheon of College Alumni. 2:00 p. m. Scientific Section. Section on Practical Pharmacy and Dispensing (Committee on Pharmacopœias and Formularies). 7:30 p. m. Meeting of Council. Ladies Reception.

Thursday—9:30 a. m. Commercial Section. Scientific Section. Practical Pharmacy and Dispensing (Committee on Pharmacopœias and Formularies). 11:00 a. m. Section on Education and Legislation. 2:00 p. m. Section on Education and Legislation. Historical Pharmacy. Women's Section. 7:30 p. m. Meeting of the Council (Reorganization). 8:00 p. m. House of Delegates. Ladies' Reception. Visit to Chinatown.

Friday—9:00 a. m. Meeting of the Council. 10:30 a. m. Final General Session. 1:30 p. m. Luncheon and Adjourned Final General Session at the Inside Inn, Exposition Grounds. 3:30 p. m. Go-as-you-please Exposition Visit. 6:00 p. m. Luncheon at the Inside Inn, Exposition Grounds. 7:30 p. m. Exposition Visit Continued—The Concessions and Illuminations.

Saturday—The Local Committee suggests that Saturday be given up to local visits and excursions, arranging the parties to suit. Some may desire to visit Mt. Tamalpais, others the Exposition and still others may desire to go to the Muir Woods, the University in Berkeley, Golden Gate Park.

WOMEN'S SECTION.

It is urged that every member of the Women's Section attend the meetings of their organization, which now is an official section of the American Pharmaceutical Association. They are also requested to invite others in attendance to join in making the San Francisco meeting a success. There will undoubtedly be quite a few present who never have had the pleasure of acquaintance with those who were active in the organization of this important and interesting section.

THE STOP IN DENVER.

The Denver branch of the Association reports the following program of entertainment for members en route to San Francisco on the A. Ph. A. special train, which will leave Chicago at 11 p. m., July 29.

Train will be met on arrival in Denver at 7:20 a. m., Saturday, July 31, and members escorted to Albany Hotel, where breakfast will be served and a few addresses made.

Party will then proceed by trolley to Golden, in the foothills of the Rockies; thence by automobile over a new and beautiful road to summit of Lookout Mountain, when a stop of several hours will be made and a box lunch served. Returning the party will reach Denver at 4:30 p. m., in time to do a little sight-seeing or shopping before the special train leaves for Colorado Springs at 7:45 p. m.

Advices from Salt Lake City report that a joint Committee of the Utah Pharmaceutical Association and Salt Lake Retail Druggists' Association has been appointed to arrange for the entertainment of visitors upon the arrival of the A. Ph. A. special train in their city, details of which will be announced later.

DIASTASE CLUB HEADQUARTERS AT SAN FRANCISCO, CAL.

The Beefsteak Room of the Hofbrau will be no mistake as the headquarters for the San Francisco meeting of the Diastase. The whole get up from the barndoor to the barrel seats and the shingle-covered piano, are ideally Bohemian and the Peremptory Prerogative (Paregoric) will be announced by whosoever will be the presiding genius over this most unique aggregation.

P. S.—As past presiding officer (Detroit) while doing the P.-P. I. E. as one of the Perjurors—I took occasion to visit the trenches with Dr. Alb Schneider. W. B.

PARTIAL PROGRAM

For the Joint and Separate Sessions of the Section on Education and Legislation.

Tuesday, Aug. 10th:

2:00 P. M.—Joint Session of the Commercial Section and Section on Education and Legislation.

1. Address of Edward H. Thiesing, Chairman of the Commercial Section.
2. Address of Frank H. Freericks, Chairman of the Section on Education and Legislation.

Reading of Papers.

"Desirable Legislation as an Aid to Maintain Pharmacy"—By Dr. James Hartley Beal.

"How Can the College of Pharmacy Best Help a Student to Secure an Appropriate Commercial Training"—By Dr. Wm. C. Anderson.

"Present method of Prescription Charges. How the joint consideration by Physicians and Pharmacists of a change in the method of prescription pricing can serve to produce a better understanding between them. The possibility of educational advantages. The best interests of the Patient. An aid to the Legitimate Retail Pharmacist"—By P. Henry Utech.

NOTE.

There will be three papers, one on each of the above subjects, read at the Joint Session under the auspices of the Commercial Section—Chairman Thiesing having about completed his arrangements to that end.

Wednesday, Aug. 11th:

9:30 A. M.—First Separate Session of the Section on Education and Legislation.

1. Report of Secretary R. A. Kuever.
2. Report of the Committee on Patents and and Trademarks—Dr. F. E. Stewart, Chairman.
3. Report of the Committee on National Legislation—Mr. John C. Wallace, Chairman.
4. Report of the Committee on Regulations for the Transportation of Drugs by Mail—Mr. Benjamin L. Murray, Chairman.

5. Report of Committee on Survey of the Pharmacal Teaching Institutions—Mr. Hugh Craig, Chairman.

Reading of Papers.

"Quizzes, Tests, or Final Examinations"—By Dr. H. V. Arny.

"Is the public welfare properly safeguarded by allowing the compounding and distribution of medicines to be made by those who prescribe them and who have not qualified as Pharmacists."—By Mr. Wilhelm Bodemann.

Report on a tentative draft for a Modern Pharmacy Law. This tentative draft is for consideration and discussion as the work of the Voluntary Conference for Drafting a Modern Pharmacy Law.

If necessary the consideration and discussion will be carried into the next Session.

Nomination of Officers.

Thursday, Aug. 12th:

11:00 A. M.—

1. Further Consideration of the Tentative Draft of a Modern Pharmacy Law.
2. Reading of Papers.

There are a number of interesting papers to be submitted for this Session for which the titles have not yet been definitely stated.

Thursday, Aug. 12th:

2.00 P. M.—Joint Session of the Section on Education and Legislation, Conference of Pharmaceutical Faculties, and National Association of Boards of Pharmacy.

Presidents F. J. Wulling, T. A. Miller, and Chairman Frank H. Freericks, presiding.

1. Report from the Conference of Pharmaceutical Faculties—By Prof. W. A. Teeters, Secretary.
2. Report from the National Association of Boards of Pharmacy—By Mr. H. C. Christensen, Secretary.

Papers of Joint Interest.

"Co-operation a Necessity. Why should there not be activity between the Medical and Pharmaceutical Professions in this direction?"—By Prof. Joseph P. Remington.

"Qualification Requirement for Teachers in Colleges of Pharmacy"—By Dr. William C. Alpers.

"Pharmaceutical Apprenticeship, Fifty Years Ago"—By Prof. John Uri Lloyd.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held on Tuesday evening, May 11, at the Philadelphia College of Pharmacy. President S. C. Henry called the meeting to order at 8:30 p. m.

The minutes of the last meeting were read and approved. Under the head of new business, Dr. F. E. Stewart was nominated and re-elected as a member of the Council of the American Pharmaceutical Association from our Branch.

Mr. J. W. England presented "The Current Review of Pharmaceutical Literature," after which a "Permanent Home for the A. Ph. A" was discussed in an informal manner. The President appointed a committee of three to further investigate the matter.

J. Ed. Brewer, Secretary.

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DETROIT.

The May meeting of the Detroit Branch of the American Pharmaceutical Association was held Friday evening, May 21, at the club rooms of the Wayne County Medical Society.

The report of the Treasurer was read and approved.

The Nominating Committee reported the following names for the various offices for the coming year:

For Member of the Council—W. A. Hall.
For President—W. L. Scoville.
For Vice-President—O. W. Gorenflo.
For Treasurer—C. F. Mann.

For Chairman Program Committee—H. B. Mason.

For Secretary—A. A. Wheeler.

The names as presented by the Committee were unanimously elected.

Mr. E. R. Jones then read an interesting paper on Greasy Cold Creams, dealing with the principles involved in making Cold Creams, and making a number of practical suggestions regarding the ingredients, perfumes, packages, etc., of these preparations.

The next paper was on prescriptions by Mr. A. A. Wheeler. Each prescription was written on a blackboard and a specimen of some of the finished products displayed.

A. A. WHEELER, Secretary.

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SAN FRANCISCO.

The San Francisco branch of the American Pharmaceutical Association held its regular monthly meeting on the evening of June the eighth, in the office of the Pacific Pharmacist. The meeting was called to order by Vice-president Jennie M. White.

The members unanimously approved of the election of Mr. J. H. Dawson as local secretary to succeed Dr. A. Schneider. The tentative program of the sixty-third annual meeting was discussed and seemed to meet with approval.

Mr. J. L. Lengfeld presented a paper on Tooth Powders and Tooth Pastes, in which he mentioned the various ingredients used in their manufacture, such as, chalk, both precipitated and prepared, magnesia, kieselguhr and kaolin. The importance of using materials of highest quality was emphasized.

The latter part of the evening was taken up with an informal discussion of the latest rulings of the Harrison Narcotic Law. It was said that under treasury decision 2194 such drugs as novocaine, anaesthesin, orthoform and quinine and urea hydrochloride would be brought under the narcotic ruling.

There being no further business the members adjourned to meet again on the evening of July 13th, 8 o'clock, 723 Pacific Building. CLARISSA M. ROEHR, Secretary.

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NASHVILLE.

The regular meeting of the Nashville Branch A. Ph. A. was held on May 19th. President E. F. Troelinger presiding.

Dr. J. O. Burge presented the subject of How to Get New Members, and his plan of sending out a small folder as an insert was approved.

Dr. J. M. Rogoff stated that his experience as a teacher had convinced him that medical students should have better training in pharmacy and in the use of the United States Pharmacopœia. On motion, Dr. J. M. Rogoff and Dr. E. A. Ruddiman were appointed a committee to draft a resolution to be presented at the annual meeting in San Francisco advocating better pharmaceutical instruction in medical schools. A question box was decided upon as a feature of future meetings and the services of the students of the pharmacy and medical departments of Vanderbilt were promised in solving difficult problems.

Dr. J. M. Rogoff then read the second of a series of articles outlining a scientific sideline for pharmacists. This paper related to the quantitative examination of the gastric contents and explained how the total acidity, free hydrochloric acid, combined acid, and organic acid can be estimated by means of volumetric alkaline solution.

W. R. White then read a paper entitled, "The Chemistry of the United States Pharmacopœia."

W. R. WHITE, Secretary.

Colleges

UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY.

The University of Illinois School of Pharmacy has graduated from its longer course the following students with the degree of Pharmaceutical Chemist:

Carroll Edwin Bundy, Sheldon, Ill.
William N. Miller, Waterloo, Ia.
Joseph Pelc, Chicago, Ill.
Edward Palmer Scruggs, Livingston, Ala.

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THE COLLEGE OF PHARMACY OF THE STATE UNIVERSITY OF IOWA.

The commencement exercises of above named school were held June 16, Hon. John Barrett, Director General of the Pan American Union, delivered the address. Membership prize in the American Pharmaceutical Association by Dean Teeters, was awarded to E. R. Bergren, subscription to the Journal of the American Pharmaceutical Association, and donated by Professor R. A. Kuever, was awarded to W. A. Konantz; prize of mem-

bership in Iowa Pharmaceutical Association, by Professor Cooper to L. T. Dyke.

The list of graduates follows: E. R. Bergren, Essex; M. H. Anderson, Dike; M. Elsie Campbell, Clinton; Mollie M. Christiansen, Clinton; L. T. Dyke, Orange City; R. L. Fenlon, Iowa City; O. E. Ferguson, Dallas Center; B. B. Hunter, Montezuma; P. K. Huston, Allerton; Mandick Olsen, Forest City; H. W. Pierce, Volga City; R. F. Schneider, Wheatland; J. R. Prieto, Cruces, Cuba; A. B. Wagoner, Pittsville, Mo.; G. J. Zopf, Marengo; R. E. Neidig, Iowa City.

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JERSEY CITY COLLEGE OF PHARMACY.

The commencement exercises of the department of pharmacy of the College of Jersey City were held at the Bergen Lyceum June 8.

Dr. Gordon K. Dickinson delivered an address, the subject being, Professional Ethics. The degrees were conferred by Dean Dr. Joseph Koppel. President James E. Pope awarded the following prizes: Gold medal to Jacob Feinberg; silver medal to Lorentz Wold; silver cup for the best examination in organic chemistry to Raphael Taub, and the Alumni medal for the best work in pharmacognosy to Louis Schultz. The post-graduate prizes consisted of five memberships in the American Pharmaceutical Association as follows: Reuben Podolsky, Harry Breslaw, Abraham Rosenberg, Jacob Bankoff and Charles Muller. These prizes were awarded by Professor Otto Raubenheimer.

Names of graduates follow:

Senior students receiving the degree of Ph. G. (Graduate in Pharmacy): Herman Berkowitz, Jacob Feinberg, Louis Golden, Morris Goldstein, William Gordon, Lewis M. Horwitz, Jacob Jurow, Edward P. McCarthy, Joseph Novelle, Jacob Rosenbach, Samuel Rosenberg, Irving M. Rosenblum, Louis Schultz, Samuel A. Schwartz, Raphael Taub, Louis Winn, and Lorentz Wold.

Post-graduate students receiving the degree of Phar. D. (Doctor of Pharmacy): Jacob Bankoff, Reuben J. Botkin, Paul G. Bretschneider, Harry Breslaw, Ralph Buonome, Vincent Case, Frank S. DeLeo, Meyer Emanuel, Benjamin Foodim, Leo Genbarg, Alfred B. Guarnier, Henry Herschkowitz, Julius A. Klein, William C. Kraemer, Abraham Lipshitz, Abraham Moldover, Charles Muller, Samuel Neham, Herman H. North, Reuben Podolsky, Sol Pollok, Abraham Rosenberg, Samuel Schwartzman, Louis Sheinaus, Edward Sher, Isaac Simetz, James A. Sussman, Remo Trotta, Morris Tobias, and Hyman Vogel.

The annual banquet was held June 7. Many interesting but brief addresses were made. Edward Sher, president of the post-graduate class, presented the college with 260 volumes, purchased by the class from the estate of William Saunders. Professor Raubenheimer was presented with a gold watch. About one hundred participated in the banquet.

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DEPARTMENT OF PHARMACY OF THE MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.

The commencement exercises of the department of pharmacy of the Medico-Chirurgical College of Philadelphia were held at the Academy of Music June 4. The degrees were conferred by President David Milne, and the doctorate oration was delivered by Hon. C. R. Woodruff. The honorary degree of doctor of pharamcy was conferred upon Dr. Francis Edward Stewart, in recognition of high achievements and service. Other degrees were conferred as follows:

GRADUATES IN PHAMACY.

Maurice Lewis Augenblick, Harry Franklin Angstadt, Pennsylvania; Jacob Elmer Baker, Maryland; Harrison George Ball. Pennsylvania; Isaac Benjamin Bloomfield, Pennsylvainia; Harry Arthur Cohen, Pennsylvania; Earl Montgomery Cole, Pennsylvania; Rudolph Kissel Dorfman, Pennsylvania; Herman Maurice Feuerstein, Pennsylvania; Jean Leon Germann, Albert George Gibboney, Pennsylvainia; James Pursley Glover, Pennsylvainia; Samuel Sidney Goodman, Pennsylvania; Lewis Sigmund Greenburg, Pennsylvania; Albert Greenlees, Pennsylvania; John Milton Groff, Pennsylvania; Edward Israel Halin, Pennsylvania; Edward Joseph Heine, Pennsylvania; Paul F. Houser, Pennsylvania; Edward Huber, Pennsylvania; Edmund Griffith Jackson, Pennsylvania; Benjamin Ivor Jones, Pennsylvania; Morris Kabacoff, Pennsylvania; Joseph Francis Kennelly, Pennsylvania; Charles Jacob Koerber, Pennsylvania; Levy Meshkov, Pennsylvania; James E. Moss, Pennsylvania; Basil Justin Fontenoy Mott, Pennsylvania; Samuel B. Ostrum, Pennsylvania; Bernard Overbeck, Pennsylvania; Asterios Pappadopoulos, Greece; Thomas Henry Peters, Pennsylvania; Chester John Powell, Pennsylvania; Morgan

Charles Reed, Pennsylvania; Harry Russock, Pennsylvania; Howard Ely Seid, Pennsylvania; Herbert Allaman Smith, Pennsylvania; George Smithgall, Pennsylvania; Martin Yalen Smulyan, Pennsylvania; Alfred Bensinger Stellwagon, Pennsylvania; Michael Stoloff, Pennsylvania; Lester Charles Thrash, Pennsylvania; Aaron Vernick, Pennsylvania; John Robert Williams, Pennsylvania.

GRADUATES IN CHEMISTRY.

To receive the degree of pharmaceutic chemist, Ph. C.—Herman Louis Grupe, Ph. G., New York; John Loyd Hess, Ph. G., Pennsylvania; Herman Wischman Mathieu, B. S., Pennsylvania; John Francis O'Brien, Ph. G., New York; Henry Luffberry Somers, Ph. G., Pennsylvania.

To receive the degree of doctor of pharmacy, Phar. D.—Truman J. Wall, Ph. C., Pennsylvania.

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NEW YORK COLLEGE OF PHARMACY.

A library service bureau will be inaugurated by the New York College of Pharmacy July 1, and conducted under the supervision of Librarian H. V. Arny by Jeanot Hostman and Adelaide Rudolph. The service can be made use of by non-residents as well as local pharmacists. Inquiries of the latter may be taken up in person or by phone; the former will receive their information through the New York Journal of Pharmacy or by mail if a stamped, addressed envelope is enclosed. Problems requiring research will be handled for a moderate fee, also translations will be made into foreign languages.

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PHILADELPHIA COLLEGE OF PHARMACY.

The ninety-fourth annual commencement exercises of the Philadelphia College of Pharmacy were held June 10th, at the Academy of Music. The announcements were made by Dean Joseph Price Remington, and the degrees were conferred by President Howard B. French. Colonel Henry C. Demming delivered the address.

The following were honored with the degree of Master in Pharmacy: William L. Cliffe, Philadelphia; Caswell A. Mayo, New York; William Mittelbach, Booneville, Mo.; Dr. H. M. Whelpley, St. Louis, and E. G. Eberle, Dallas, Texas.

The list of graduates follows:

Graduates in Pharmacy: Aaron Moses Abrahamson, Carlos Maria Aguiar, Ahmed Mahmound El Aguizy, Miss Silvia Clotilde Alacan, Clinton Fisk Avis, Harold Romayne Biddleman, Jay William Bright, Earl Raymond Briner, Bernice Berry Brown, Ph. G.; Miss Estella Elizabeth Brozeitis, Ph. G.; Edward Thomas Burton, Jr., Martin Francis Carmody, Earl Daniel Clark, Paul Close, Charles Mervin Conrow, Miss Catherine Elizabeth Costello, Parker Bare Creep, Ralph Bernard Deaver, Henry Bristol Decker, Lewis Hayden Eaton, Joseph Francis Elward, P. C.; Charles Brewin Everlockner, Miss Fanny Ferry, P. C.; Elmer Delmire Fox, Joseph Fox, Lewis Armstrong Fredericks, Ivan Ralph Fuss, Walter Emanuel Gable, Louis Gershenfeld, Raymond George Gibney, Leonard Edward Greenberg, Ralph Grube, William Frederick Haase, Jr., Charles Raymond Harer, Clarence Augustine Adams Henry, William John Heymann, Earle Milton Hite, James Henry Hodgkins, Miss Eleanor Grace Hoffman, John Henry Hoffman, Arnold Hoffman Huber, Joshua Israel, Charles Edwin Jackson, Elwyn Jones, James Watson Kephart, Frank Martin King, Dixon George Kitzmiller, Jr., Paul Edgar Klucher, William Charles Kohnle, William Sides Kobler, Charles Franklin Moyer, Edward Vincent Myer, Robert Lester Myers, William Edgar Nelson, Charles Adrian Pennock, Charles William Pepper, Earle Charles Phillips, Garland Blair Potterfield, Frank Jerome Reddon, Vaughn Rose Rupert, George Woodward Samsel, Bernard Samuels, Wesley Melvin Saylor, Lewis Cass Scheffey, Miss H. Edith M. Schofield, William Watts Schollenberger, Philip Siegel, P. C.; Harry Lauich Smith, James Samuel Soyles, Chester Arthur Spangler, Stephen Treverton Spargo, Henry Horace Stiles, Robert James Stewart, Harvey E. Stouer, Carroll Burrill Suminsby, William Randolph Tenney, John Thomas, Charles Isaac Tomlin, Samuel Aaron Trethewey, Harry David Wagner, Miss Esther Weinberg, Albert Maurice Weiner, Harry Randolph Whitmire, Joseph Livingston Wilder, David Boyer Witman, Gaile Edgar Wolfe.

Pharmaceutical Chemists—Walter Elmer Asher, Miller Hawk, Herbert Victor Jordan, Niles Amadus Knauss, Robert Allen Levy, Robert Franklin Ligan, Paul Marcus Pfeiffer Merner, Thomas Gilbert Miller, Mark Riggs, Gerald John Ruddy, Walter Raymond Scher, Charles Romey Silva, William Henry Snyder, Harold Edwin Werkheiser.

Certificate of Proficiency in Chemistry—Robert Truman Beardsley, John Brady Evans, Lloyd Philip Greisemer, Thomas Danforth Hughes, Paul S. Rodgers, Joseph Stein, Archibald Wolever.

Certificate in Bacteriology—Norman L. Force, Jacob Edison Good, Gilbert Leon Harvey, John Harry Hayes, Howard Jonathan Koch, Robert Franklin Ligan, Henry Lischer, George Lulie, Martin Lester Messinger, Lloyd Harry Patten, Leroy Ludwig Pennypacker, James Walter Shaffer, Guy Warren Showers, Harry Lanich Smith, Jay A. Smith, Elmer Milton Weidner, Harry Randolph Wiltmire, William Henry Woodring.

ANNIVERSARY REUNION.

Forty-five members of the class which graduated from the Philadelphia College of Pharmacy in 1885 met June 9 at the Hotel Adelphia.

The out-of-town members present were: W. B. Bissell, Syracuse, N. Y.; Dr. Charles J. Craythorn, Trenton; Dr. S. B. Crothers, Chester; Edward D. Cahoon, Fouthold, L. I.; O. B. Deakyne, New York; Dr. William D. Deuschle, Columbus, Ohio; P. S. Gehris, Brooklyn; George E. Hurd, Chicago; Dr. James Hunter, Jr., Westville, N. J.; H. E. Heinitsh, Spartansburg, S. C.; Dr. James O. Howells, Bridgeport, Ohio; Dr. Grant E. Kirk, Camden; Benjamin Rosenweig, Brooklyn; Joseph C. Roberts, Arlington, Md.; Dr. Walter Reynolds, Atlantic City; A. L. Serfass, Easton, Pa., and Henry S. Saunders, Toronto.

The Philadelphia members were: William C. Bichy, Robert C. Cadmus, George L. Carnan, J. A. Eberly, Arthur B. Hammond, Daniel H. Hassler, George A. Haffa, Harry E. Jones, Dr. E. Bryan Kyle, Alex. G. Keller, Dr. J. M. Malatesta, Robert B. Matter, Dr. John D. Moore, W. H. Morrette, J. L. Nedbinger, John W. Newton A. Curtis Schofield, George M. Smith, Thomas L. Schofield, Dr. S. L. Van Buskirk, and Dr. Alfred C. Wood.

The fifty-first anniversary reunion and dinner of the Philadelphia College of Pharmacy was held at Hotel Walton, with a large attendance. Dean Joseph P. Remington, of the college, was toastmaster. Addresses were made by George W. Samsel, of the graduating class; Caswell A. Mayo, representing the alumni association, and Dr. Alfred Heineberg.

Societies

EIGHTH ANNUAL MEETING OF AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS.

The eighth annual meeting of the American Association of Pharmaceutical Chemists was held in Rochester, N. Y., May 31 to June 5.

President George C. Hall, of New York, reviewed the activities of the year in an able address. Among the important actions taken at the meeting was the establishment of a scientific section to consider and promote the scientific manufacture of pharmaceutical preparations, to define exactness and uniformity in tests and methods of analyses and to have these results recognized by federal and state officials. It is proposed to standardize formulas and eliminate as far as possible those that are useless and unscientific.

The suggestion was also made that so far as practical, narcotics be stricken from pharmaceutical compounds.

A valuable report was presented by the Board of Directors. They indicated their strong approval of the Federal narcotic law and the enactment of effective and uniform state laws modeled after this measure. They also approved the constructive work of the Chamber of Commerce of the United States, providing for uniformity in pure food and drug laws. They recommended the enactment of laws, providing for the proper sanitation and inspection of all places where drugs and medicinal preparations are manufactured, sold, dealt in or handled in any manner.

The Board of Directors presented a resolution by which the Association reaffirms its confidence in and approval of the purposes of the National Drug Trade Conference and continuance of co-operation. R. C. Stofer, W. T. Abbott, and George C. Hall were named delegates and the president was authorized to appoint alternates. Co-operation was offered the American Dairy, Food and Drug officials. They approved proper and effective safeguarding of the sales and manufacture of mercuric chloride tablets, but disapproved of the cylindrical tablet, colored pink and wrapped separately in paper.

B. L. Maltbie as chairman of the committee

on variation clause presented the following resolution:

Resolved, That the American Association of Pharmaceutical Chemists hereby record its earnest disapproval of the elimination of the variation provision of the Food and Drugs Act of June 30, 1906, and in several similar state laws, believing that such an amendment is contrary to public welfare.

Cedar Rapids, Ia., was selected for the next place of meeting. The following officers were elected: President, B. L. Maltbie, Maltbie Chemical Company, Newark, N. J.

First Vice-President, E. S. Holt, Howard-Holt Company, Cedar Rapids, Iowa.

Second Vice-President, J. W. Haynie, Columbus Pharmacal Company, Columbus, Ohio.

Secretary-treasurer, Dr. C. H. Searle, G. D. Searle Company, Chicago, Ill.

The Board of Directors, members elected for one year: H. A. Stiles, Stearns & White Company, Chicago, Ill.; H. C. Moore, Pitman-Moore Company, Indianapolis, Ind.; R. J. Strasenburgh, Rochester, N. Y.

Members elected for two years: R. C. Stofer, the Norwich Pharmacal Company, Norwich, N. Y.; F. L. H. Nason, Tailby-Nason Company, Boston, Mass.; G. C. Pratt, the National Drug Company, Philadelphia, Pa.

Members elected for three years: C. W. Abbot, M. D., the Abbot Alkaloidal Company, Chicago, Ill., chairman; G. C. Hall, the Zemner Company, Pittsburgh, Pa.; G. D. Ellyson, the Standard Chemical Company, Des Moines, Iowa.

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AMERICAN MEDICAL ASSOCIATION.

We are not in position for this issue to make extended reference to the annual meeting of the American Medical Association in session at San Francisco during the week of June 22. We abstract briefly from the address of President W. L. Rodman, his reference to the elimination of medicine frauds and secondary education leading to the medical profession.

Referring to the efforts which the association had made in the elimination of patent medicine frauds, Dr. Rodman said the fight had involved legal proceedings which the association was combating vigorously, but that it was interesting to note that concerns with new preparations for the market were coming to the association's experts for endorsement. The Council of Pharmacy and Chemistry now had in its laboratories three chemists who give their whole time to testing such medicine, and the work had culminated in the issue of the book entitled "Useful Drugs," which a number of the best schools now use as a textbook.

"It remains," he said, "for the profession to set its ban on all proprietary medicines, if the only information concerning them comes from those who manufacture and sell them."

A point on which Dr. Rodman laid great stress was secondary education leading to the medical profession. The reforms which the association had fought for in medical schools had been so far brought about that the standard required was now as high as it should be for all of the schools of the entire country.

"An irreducible minimum has been reached," he said, "and it should be honestly enforced—that is, as soon as it can be. There is, of course, no limit to the maximum that any highly endowed and exceptionally circumstanced institution may adopt for itself."

He said that the ranks of the medical schools had been so thinned that a third of the schools were now hors de combat and it was expedient to mark time for a while "and give those institutions which have approached the firing line at a double-quick speed a chance to catch their breath."

But the problem of secondary education for the medical man he thought was handicapped by too high a cultural standard. Although a course in biology, chemistry and physics was agreed upon as a prerequisite to the study of medicine, the subjects were not taught satisfactorily in the high schools and colleges generally.

"Therefore, for the present at least, it must be taught largely by the medical schools, or there must be, as has been suggested by distinguished educators, a rearrangement of the curricula of high schools, so that they will embrace a course in the science which will be acceptable to medical schools.

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NEBRASKA ASSOCIATION.

The thirty-fourth annual meeting of the Nebraska Association convened in Omaha June 8th to 10th. J. Leyden White, of Washington, addressed the Association, and F. W. Nitardy, of Denver, presented an excellent paper, which is printed in this issue of the Journal.

Chancellor Avery, of the University of Nebraska, delivered a brief address.

One evening of the convention was given over to a lecture by Dr. F. W. Millner, ex-

perimental engineer of the Union Pacific railroad. This was made most interesting by experiments with wireless telegraphy and telephoning from and to trains in motion.

The election of officers resulted as follows: K. L. Kreizinger, President; Vice-presidents in the order named: J. E. O'Brien, Omaha; W. E Clayton, Grand Island; J. C. Preston, Pierce; G. T. Haines, Omaha; J. C. Hoff, Wisner; O. D. Adams, Treasurer, Nehawka, and J. G. McBride, Secretary, University Place.

Hastings was selected as the next place of meeting.

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NORTH CAROLINA ASSOCIATION.

The thirty-sixth annual convention of the North Carolina Pharmaceutical Association met at Durham June 15-17. President G. C. Goodman advocated the Stevens bill, commended the Harrison law and outlined the activities of the Association. Thirty-six new members were added. A. L. Fishel was awarded the James H. Beal membership prize, having attained the highest average of the year before the North Carolina Board of Pharmacy.

An interesting program was carried out, enhanced by the following list of valuable papers and speaks for the successful work of Chairman E. L. Tarkenton:

Parcel Post and How I Made a Success of the Drug Business, by C. A. Raysor, Asheville. How Does the Laity Learn the Use of the Newer Synthetic Remedies and the Best Method of Getting the Physician to Prescribe N. F. Preparations, William H. Blauvelt, Asheville. Cultivation of Ginseng and Hydrastis, K. E. Bennett, Bryson City. Kodak and Kodak Supplies and News Stands for Drug Stores, Geo. Y. Watson, Southport. Commercial Pharmacy, C. P. Greyer, Morganton. State Pharmacy Laws, W. W. Horne, Fayetteville. Relation of the Physician and Pharmacist, Burney S. Warren, Greenville. How to Stimulate a Sick Drug Business, E. L. Tarkenton, Wilson. Is the Attendance at Most Pharmaceutical Meetings Due to Lack of Interest or Lack of Time? H. T. Hicks, Raleigh. The Retail Pharmacist and the Traveling Salesman, P. W. Vaughan, Durham. Why Some Pharmacists Don't Make More Money, Sam. E. Welfare, Winston. Deterioration of Pharmaceutical Preparations, Jno. L. Henderson, Chapel Hill. Advantage and Disadvantage of Buying in Large Quantities, C. C. Seawell, High Point. The Conflict Between Professional and Commercial Pharmacy, J. G. Beard, Chapel Hill. Reciprocity, H. W. Leyden, Burlington. Are We Preparing Satisfactory Clerks? J. E. Shell, Lenoir.

The election of officers resulted as follows: President, E. L. Tarkenton, Wilson; First Vice-President, E. G. Birdsong, Raleigh; Second Vice-President, G. A. Matton, High Point; Third Vice-President, S. E. Welfare, Winston-Salem; Secretary, J. G. Beard, Chapel Hill; Local Secretary, D. A. Elvington, Wilmington; Treasurer, G. E. Burwell, Charlotte; Executive Committee, C. J. O'H. Horne, Greenville; L. L. Haywood, Durham; P. A. Lee, Dunn; Jesse Carter, Aberdeen; J. G. Beard, ex-officio, Chapel Hill; Member of Board of Pharmacy, C. P. Greyer, Morganton.

The next meeting of the Association will be at Wrightsville on the coast, June 20-21-22, 1916.

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ILLINOIS PHARMACEUTICAL ASSOCIATION.

The Illinois Pharmaceutical Association held a successful meeting at Springfield June 15-17. Professor J. H. Beal delivered an address on "The Standardization of Pharmacy Legislation"; U. S. Senator Lawrence Y. Sherman spoke on "Pharmaceutical and Medical Legislation." Secretary Potts of the N. A. R. D. addressed the convention on the Stevens bill and Harrison law.

President W. F. Bunn in his annual address criticized "cut-rate" druggists and mail order houses handling drugs and spoke of legislation affecting druggists before the present legislature. Before the convention finally adjourned it was announced that the anti-narcotic bill (S. B. 300) had been passed and gone to the governor.

The association will for the next five years meet in Springfield, with the understanding that a pharmaceutical exhibit will be provided and it is also contemplated to canvass the state for new members. Dr. J. H. Beal donated one hundred dollars to the Association, the interest to be used to provide membership in the Association for three young men each year, who make the best average before the Illinois Board of Pharmacy.

The following were awarded prizes for papers: W. S. Denton, subject, "Should the Ownership of Drug Stores be Restricted to Registered Pharmacists"; G. E. Schwitzer, "How to Build Up Business by Courtesy" and "Business Getting" by F. B. Shaffer.

The Auditing Committee reported $1207.28 in the general fund and $600 in the permanent fund. Sixty new members were elected. The Association reaffiliated with the National Association of Retail Druggists. The names of T. D. Gregg, C. A. Stover, L. P. Larsen, C. F. Schultz, and H. C. Schuh were recommended to the governor, from which to select one new member of the Board of Pharmacy. E. A. Sell, F. H. Kroh and F. Mares were endorsed for the Advisory Board of the University.

The election of officers resulted as follows: President, Julius Riemenschneider, Chicago; First Vice-President, W. S. Denton, Beardstown; Second Vice-President, Byron Armstrong, Jacksonville; Third Vice-President, Robt. J. Phillips, Springfield; Secretary, W. B. Day, Chicago; Treasurer, Chris. Garver, Bloomington.

The thirty-seventh annual convention will be held at Springfield June 6, 7 and 8, 1916.

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TEXAS ASSOCIATION.

The thirty-sixth annual meeting of the Texas Pharmaceutical Association was held in Houston June 15th to 17th. While the attendance was not as large as anticipated, the meeting was a very enjoyable one and Houston did its part well as a host. Frank B. Dwyer welcomed the visiting druggists on behalf of the local Association, and Mrs. Clinton Murray in a eulogy praised the men who make the physicians' success possible. The city's welcome was extended by Commissioner H. A. Halverton. Dr. E. F. Cook spoke for the Medical Association, in which he complimented Dr. R. R. D. Cline, who represented the Texas Pharmaceutical Association at the State Medical Association.

President Walter D. Adams in a very comprehensive and valuable address reported the activities of the Association during the term of his office. He recommended that the House of Delegates of the American Pharmaceutical Association be composed of representatives of various state associations, and this recommendation was approved. He also advocated re-affiliation with the National Association of Retail Druggists and in this he also was upheld.

Among the visitors from outside of Texas was Hugh Craig, Editor of the Journal of the National Association of Retail Druggists. He discussed in a very able and brilliant manner the laws that had affected pharmacy during the past and at the present time. He spoke in favor of the Stevens bill and explained the good results that have resulted from the Harrison law. The Harrison law was also discussed by Deputy Collector Zinnecker. Dr. R. R. D. Cline spoke of the importance of standardizing drugs and preparations. W. H. Cousins, of the Southern Pharmaceutical Journal, spoke of the relation between retail druggists and the jobber.

The get-together spirit and co-operation was the subject of a number of addresses and papers.

R. H. Walker delivered the annual memorial address and paid a beautiful tribute to deceased members. Unfortunately it became his duty to speak of the death of Mrs. I. Lewyn, the wife of one of the Houston members, who died while the Association was in session at Houston.

The activity of the Women's Auxiliary was evidenced in the establishment of a scholarship in the Pharmacy Department of the State University in providing a scholarship for a worthy girl student each year.

The election of officers resulted as follows: A. M. Fischer, of San Antonio, President; C. E. Craycroft, of Sherman, First Vice-president; W. G. Wilman, of Brownsville, Second Vice-president; Mrs. E. B. Dwyer, of Houston, Third Vice-president; Tom J. Snell, of Cooper, Fourth Vice-president; W. H. Cousins, of Dallas, Secretary-treasurer; J. W. Graham, of Austin, Home Secretary; Miss Lum Shipe, of San Marcos, Historian.

Fort Worth was selected as next place of meeting and the time the third Tuesday in May.

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KENTUCKY ASSOCIATION.

The thirty-eighth annual meeting of the Kentucky Pharmaceutical Association was held June 15th to 17th at Dawson Springs. It was provided that the state should be thoroughly organized so that legislative measures may be strongly supported. The Stevens bill was re-endorsed and the members urged to support its passage in every way possible. Quite a number of valuable papers were read, and the following officers were elected for the ensuing year: President, W. H. Tibbals, Somerset; Secretary, J. W. Gayle, Frankfort; Treasurer, Vernon Driskell, Carrollton; Chairman Executive Committee, Leon Evans, Mayfield.

Selection of the next meeting place is left to the executive committee.

IOWA ASSOCIATION.

The Iowa Pharmaceutical Association met at Clear Lake. While the attendance was not as large as anticipated on account of inclement weather, there were upwards of 700 in attendance.

J. Leyden White and Charles Huhn participated in the meeting as representatives of the N. A. R. D. A resolution was passed advocating a constitutional commission of seven members in the N. A. R. D., who should not be elective or appointive office holders in that Association during their time of service on such commission. The development of the organization into one of state units forming the whole, was recommended as one of the points to be considered by the commission. The reorganization of the executive division along lines corresponding to that of the President and Cabinet of the United States.

The officers of the Association elected at the meeting are: J. R. Sutter, Burlington, President; Milo J. John, Clinton, First Vice-President; J. L. Etzel, Clear Lake, Second Vice-President; T. M. Watts, Holstein, Third Vice-President; J. M. Lindly, Winfield, Treasurer; Al. Falkenhainer, Algona, Secretary; A. C. Phillips, Manchester, Executive Committee member for three year term.

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MARYLAND ASSOCIATION.

The thirty-third annual convention of the Maryland Pharmaceutical Association was held at Braddock Heights.

President J. F. Leary, in his address, called the attention to a number of unnecessary laws relating to pharmacy and recommended opposition to every legislative bill hereafter that was not first indorsed by the State Association. Supervision over the dispensaries of physicians was recommended. The Stevens' bill was indorsed. Doctor A. R. L. Dohme spoke on the Harrison law. He asserted that the synthetic substitutes for cocaine were not habit-forming and should not come within the purport of the law. He contended that a distinction should be made between a hypnotic and a narcotic.

A resolution was offered that a pharmacist have place on the State Health Board.

Among the visitors at the convention were representatives from other state associations, Secretary Potts of the N. A. R. D. and Dr. Lyman F. Kebler. Charles H. Knight, J. Fuller Frames, and J. William Dorman, of Baltimore, were recommended to the Governor for appointment of one member on the State Board of Pharmacy.

The following officers were elected: President, G. A. Bunting, Baltimore; First Vice-President, Thomas M. Williamson, Frederick; Second Vice-President, Eugene W. Hodgson, Baltimore; Third Vice-President, Charles K. Stottlemeyer, Hancock; Secretary, E. F. Kelly, of the University of Maryland, Baltimore; Treasurer, Samuel Y. Harris, Baltimore.

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PENNSYLVANIA ASSOCIATION.

The Pennsylvania Pharmaceutical Association convened in the thirty-eighth annual convention at Forest Park, June 22d to 24th. A large number of interesting papers were presented, including a very comprehensive report on the drug market.

President E. F. Heffner recommended in his address the appointment of a Publicity Committee for disseminating correct information regarding pharmacy to the general public. Affiliation with N. A. R. D. was continued, and the Stevens' bill endorsed.

The newly elected officers are: President, Theodore Campbell, of Philadelphia; Vice-Presidents, Adolph Schmidt, of McKeesport, and Adam B. Heckerman of Port Royal; Secretary, David J. Reese; Assistant Secretary, Lewis H. Davis; Treasurer, Francis H. E. Glein; Member of Executive Committee for three years, Crowell Keller, of Harrisburg.

The next meeting will be held at Reading, Pa., June 20th, 1916.

The Pharmacist and the Law

The health department of the city of New York has appointed inspectors to visit all large manufacturers and distributors of "patent" remedies, having in view the purpose of driving all such remedies as make false representations from the market, and also in order to induce the manufacturers to file their qualitative formulas for their medicines with the health department, although the local health board's formula disclosure ordinance does not become effective until December 31, 1915. To date none of the

manufacturers of proprietary medicines has complied with this ordinance.

Several manufacturers have been brought into court and it is stated that the cases will be defended.

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PENNSYLVANIA RECIPROCAL RECOGNITION OF PHARMACY GRADUATES BILL APPROVED.

Governor Brumbaugh, of Pennsylvania, has approved an amendment to Section 5 of the general pharmacy act of May 24, 1887, by providing that pharmacists' certificates shall be issued (after proper examination, etc.) only to graduates of colleges of pharmany "of this (Pennsylvania) or some other state or any foreign country whose pharmacy licensing board or other authority recognizes the graduates of the reputable and properly chartered colleges of pharmacy of Pennsylvania, and admits the graduates of all such colleges to its pharmacy licensure examinations."

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HARRISON LAW RULINGS.

Article I, second paragraph of the Harrison law has been amended as follows, and relates to registration by owners of more than one store, etc.

"If the applicant has more than one place of business, or if, in any case, the applicant is engaged in more than one profession or business where any of the drugs above described (in the law) are made, stored or dispensed, a separate application for registry must be made and a special tax must be paid in each such case."

A decision (T. D. 2214) provides that in order to legally register a party must be a legitimate producer, importer, manufacturer, seller, or distributor of the aforesaid drugs, and likewise a physician, dentist or veterinary surgeon can register under this act and dispense these drugs "in the course of his professional practice only." It also follows from the express language of the act that such physician, dentist or veterinary surgeon can prescribe such drugs when he "has been employed to prescribe for the particular patient receiving such drugs," and upon whom he "shall personally attend in the course of his professional practice only," and such prescriptions must be made "in the legitimate practice of his profession," and then only when "employed to prescribe for the particular person receiving such drugs."

This ruling will largely exclude the supplying of drugs on mail orders.

Another ruling provides that collectors of internal revenue will require persons making applications to state, under oath, in the blank space on Form 678, or if not sufficient space on the line for that purpose it should be in the form of an affidavit attached to the application or this form, that they will engage in administering, dispensing or prescribing narcotic drugs only in the legitimate practice of medicine, dentistry or veterinary surgery; or will engage in the business of producing, importing, manufacturing, compounding, dealing in, dispensing, selling or distributing, as the case may be, only those narcotic drugs for which they are duly qualified by law, e. g., "The undersigned is now engaged or on and after ———— will engage in the legitimate practice of medicine (dentistry or veterinary surgery), and is, or are, duly authorized by law to administer, dispense or prescribe narcotic drugs," or "The undersigned is now engaged or on and after ———— will engage in the lawful business of producing (importing, manufacturing, compounding, dealing in, dispensing, selling or distributing) narcotic drugs."

Council Business

COUNCIL LETTER No. 24.

Philadelphia, Pa., May 26, 1915.

To the Members of the Council:

Motions Nos. 37 (Award of Contract for Reporting 1915 Annual Meeting) and *38 (Election of Members; Applications Nos. 114 to 131, inclusive)*, have each received a majority of affirmative votes.

Motion No. 39 (Appropriation of $50 for A. Ph. A. Buttons and Pins). Moved by H. M. Whelpley, seconded by J. W. England, that an appropriation of fifty dollars be made for the purchase of official A. Ph. A. Buttons and Pins. The appropriation is approved by the Committee on Finance.

Motion No. 40 (Election of Members). You are requested to vote on the following applications for membership:

No. 132. Joseph Winfred Raycraft, 702 Jackson St., Springfield, Ill., rec. by Clyde M. Snow and W. B. Day. (Pharmacy Prize, University of Illinois, School of Pharmacy.)

No. 133. Samuel Leon Baker, 1554 W. 12th St., Chicago, Ill., rec. by W. B. Day and

Clyde M. Snow. (Materia Medica Prize, University of Illinois, School of Pharmacy.)

No. 134. Frank Eugene Lane, Jr., 4015 Blair Ave., St. Louis, Mo., rec. by Glenn A. Burkart and H. M. Whelpley.

No. 135. David J. Reese, 17th and Huntingdon Sts., Philadelphia, Pa., rec. by Charles H. LaWall and M. R. LaWall.

No. 136. Omer St. Amour, Box 1819, Ste. Agathe Des Monts, Quebec, rec. by Alex. J. B. Moore and Wm. B. Day.

No. 137. William G. Heddesheimer, 2482 8th Ave., New York, N. Y., rec. by Joseph Maisel and J. Leon Lascoff.

No. 138. Gustave H. Meyer, 2433 7th Ave., New York, N. Y., rec. by Joseph Maisel and J. Leon Lascoff.

No. 139. Jacob Marianowsky, 310 S. 4th St., Brooklyn, N. Y., rec. by J. Leon Lascoff and Gustave Horstmann.

No. 140. Oscar M. Godlust, 1566 3d Ave., New York, N. Y., rec. by J. Leon Lascoff and Thomas Latham.

No. 141. P. Gerhard Albrecht, Cleveland School of Pharmacy, Cleveland, O., rec. by Wm. C. Alpers and J. L. Stingel.

No. 142. George Gehring Marshall, Marshall Bldg., Cleveland, Ohio, rec. by Wm. C. Alpers and J. L. Stingel.

No. 143. Wm. P. Stevenson, 210 Spruce Ave., Rochester, N. Y., rec. by Eugene L. Maines and Howard W. Gardner.

No. 144. Hilton F. Snider, 195 Exchange St., Rochester, N. Y., rec. by Eugene L. Maines and Howard W. Gardner.

No. 145. John Harold Strasenburgh, 195 Exchange St., Rochester, N. Y., rec. by Eugene L. Maines and Howard W. Gardner.

No. 146. J. Larkin Fields, 110 E. Douglas St., Wichita, Kans., rec. by J. S. Chism and Wm. B. Day.

No. 147. George E. Canham, 6144 Kenwood Ave., Chicago, Ill., rec. by Wm. B. Day and Clyde M. Snow.

No. 148. Mike Robert Bianco, Du Quoin, Ill., rec. by Wm. B. Day and Clyde M. Snow. (Chemistry Prize, University of Illinois, School of Pharmacy.)

No. 149. Harry Deathe, 300 Link St., Palestine, Texas, rec. by J. Morgan Fletcher and E. G. Eberle.

No. 150. Mayne E. Parker, 1902 Bellefontaine St., Indianapolis, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 151. Miss Beatrice W. Fansler, 1015 South Washington St., Marion, Ind., rec. by A. H. Dewey and L. Atkinson.

No. 152. Arthur E. Denison, 815 Beech St., Terre Haute, Ind., rec. by A. H. Dewey and C. B. Jordan.

No. 153. E. Carl Mayfield, LaFayette, Ind., rec. by A. H. Dewey and C. B. Jordan.

No. 154. Merrit W. Tam, Warren, Ind., rec. by A. H. Dewey and D. B. Adams.

No. 155. Walter R. Shugers, Auburn, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 156. Miss Bessie Olive Cole, 3618 Sycamore St., Baltimore, Md., rec. by Chas. Caspari, Jr., and Henry P. Hynson.

No. 157. Annie M. Patterson, 631 Euclid Ave., Roland Park, Baltimore, Md., rec. by Chas. Caspari, Jr., and Henry P. Hynson.

No. 158. Charles Joseph Shulmyer, 291 California Ave., Providence, R. I., rec. by William O. Blanding and Albert W. Claflin.

No. 159. Beth Angeline Michel, Baylor College of Pharmacy, Dallas, Texas, rec. by Chester A. Duncan and E. G. Eberle.

No. 160. John Edward Tremble, 644 St. Catherine St., West, Montreal, Quebec, Canada, rec. by Alex. J. B. Moore and Wm. B. Day.

No. 161. Roy Thomas Cope, 314 Main St., Irwin, Pa., rec. by Charles H. LaWall and E. G. Eberle.

No. 162. Herman Leon Hinski, 2738 E. Allegheny Ave., Philadelphia, Pa., rec. by Charles H. LaWall and M. R. LaWall.

No. 163. Wilbur B. Goodyear, 1901 Derry St., Harrisburg, Pa., rec. by Charles H. LaWall and M. R. LaWall.

No. 164. Frank Louis Hunt, 47 West Main St., Norwich, N. Y., rec. by H. V. Arny and J. Hostmann.

No. 165. Victor Emanuel Levine, 437 W. 59th St., New York, N. Y., rec. by Otto Raubenheimer and Luke C. Hines.

No. 166. Joseph Jacobsohn, 3639 Third Ave., New York, N. Y., rec. by Dr. Adolph Shnitter and Otto Raubenheimer.

No. 167. David Costelo, 918 Sixth Ave., New York, N. Y., rec. by Thomas F. Main and Caswell A. Mayo.

No. 168. John J. Bockar, 139 Liberty St., New York, N. Y., rec. by C. A. Mayo and J. Hostmann.

No. 169. Clarence T. Wittkamp, Montgomery and Brewster Ave., Cincinnati, Ohio, rec. by Theo. D. Wetterstroem and Frank Cain.

No. 170. Attilio Stephen Musante, 1270 Jackson St., San Francisco, Cal., rec. by Jos. L. Lengfeld and Wm. M. Dordivenus.

No. 171. Oliver C. Buss, 162 N. Franklin St., Chicago, Ill., rec. by Chas. C. Orr and W. B. Day.

No. 172. Duane Earle Webster, North St., Grafton, Mass., rec. by John F. Correa, Jr., and Francis H. Tapley.

No. 173. William Hensge, 10500 Cedar Ave., Cleveland, Ohio, rec. by William C. Alpers and Wm. B. Day.

No. 174. Lillian Varsanger, 2354 Milwaukee Ave., Chicago, Ill., rec. by Mrs. M. M. Gray and Wm. B. Day.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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COUNCIL LETTER No. 25.

Philadelphia, Pa., June 3, 1915.

To the Members of the Council:

Gentlemen—*Motions No.* 39 (*Appropriation of* $50 *for A. Ph. A. Buttons and Pins*), *and No.* 40 (*Election of Members; Applications Nos.* 132 *to* 174, *inclusive*), have each received a majority of affirmative votes.

The following letter was received on May 31, 1915:

Mr. J. W. England, Secretary of the Council, American Pharmaceutical Association, Philadelphia, Pa.:

MY DEAR SIR—The Bellevue Hotel is to be the Headquarters of the A. Ph. A. meeting at San Francisco, as you are aware. The change in the program proposed by Dr. Wulling is approved by the local committee.

I find it necessary to resign as Local Secretary as I am obliged to be away from San Francisco during the entire month of June and probably also the greater part of July. Mr. A. L. Leber, of 930 Tenth Street, Oakland, California, has been recommended to take my place. Mr. Leber has the leisure necessary to attend to the work, and is withal a good man for the place. I will turn over to him the correspondence and will assist him as much as I can. Yours very truly,

ALBERT SCHNEIDER.

Motion No. 41 (Resignation of Local Secretary Albert Schneider). Moved by G. M. Beringer, seconded by J. W. England, that the resignation of Albert Schneider as Local Secretary be accepted.

The Local Secretary is an officer of the Association, and must, of necessity, be a member. A. L. Leber of Oakland, California, is not a member of the American Pharmaceutical Association, and, of course, is ineligible for election as Local Secretary; a telegram was immediately sent to John H. Dawson, Associate Editor of the Pacific Pharmacist, asking him to consult the local members for choice of successor to Local Secretary Schneider, and the name of Mr. Dawson himself is recommended; address Pacific Pharmacist, 723 Pacific Building, San Francisco, Cal.

Motion No. 42 (Election of John H. Dawson as Local Secretary to succeed Local Secretary Albert Schneider, resigned). Moved by G. M. Beringer, seconded by J. W. England, that John H. Dawson be elected Local Secretary to succeed Local Secretary Albert Schneider, resigned.

Prompt action by the Council is necessary and members are requested to send in their votes soon.

J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

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COUNCIL LETTER No. 26.

Philadelphia, Pa., June 9, 1915.

To the Members of the Council:

Gentlemen—*Motions No. 41 (Resignation of Local Secretary Albert Schneider)*, and *No. 42 (Election of John H. Dawson as Local Secretary to succeed Local Secretary Albert Schneider, resigned)*, have each received a majority of affirmative votes.

In Council Letter No. 14 (January 15, 1915), a *tentative* program for the sixty-third annual meeting of the American Pharmaceutical Association, to be held at San Francisco during the week of August 9 to 14, 1915, was submitted by the Committee on Program, and suggestions invited. The program as finally prepared is now submitted as follows:

Monday—
9:00 A. M.—Meeting of the Council.
3:00 P. M.—First General Session.
7:30 P. M.—House of Delegates.
8:30 P. M.—Meeting of Committee on Nominations.
Meeting of Committee on Resolutions.
9:30 P. M.—President's Reception.

Tuesday—
9:30 A. M.—Second General Session.
2:00 P. M.—Scientific Section.
Women's Section.
Joint Session of Commercial Section and Section on Education and Legislation.
7:30 P. M.—Meeting of the Council.
House of Delegates.
Ladies' Theatre Party.

Wednesday—
9:30 A. M.—Section on Education and Legislation.
Commercial Section.
12:30 P. M.—Luncheon of College Alumni.
2:00 P. M.—Scientific Section.
Section on Practical Pharmacy and Dispensing (Committee on Pharmacopœias and Formularies).
7:30 P. M.—Meeting of Council.
Ladies' Reception.

Thursday—
9:30 A. M.—Commercial Section.
Scientific Section.
Practical Pharmacy and Dispensing (Committee on Pharmacopœias and Formularies).
11:00 A. M.—Section on Education and Legislation.
2:00 P. M.—Joint Session of Section on Education and Legislation and A. C. P. F. and N. A. B. P.
Historical Pharmacy.
Women's Section.

7:30 P. M.—Meeting of the Council (Reorganization).
8:00 P. M.—House of Delegates.
Ladies' Reception.
Visit to Chinatown.

Friday—

9:00 A. M.—Meeting of the Council.
10:30 A. M.—Final General Session.
1:30 P. M.—Luncheon and Adjourned Final General Session at the Inside Inn, Exposition Grounds.
3:00 P. M.—Go-as-you-please Exposition Visit.
6:00 P. M.—Luncheon at the Inside Inn, Exposition Grounds.
7:30 P. M.—Exposition Visit Continued—The Concessions and Illuminations.

Saturday—

The Local Committee suggests that Saturday be given up to local visits and excursions, arranging the parties to suit. Some may desire to visit Mt. Tamalpais, others the Exposition, and still others may desire to go to the Muir Woods, the University in Berkeley, Golden Gate Park.

Do you approve the above program? This will be regarded as *Motion No.* 43 (*Approval of Program for* 1915 *Annual Meeting*).

J. W. ENGLAND,
Secretary of the Council.
415 N. Thirty-third Street.

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COUNCIL LETTER No. 27.

Philadelphia, Pa., June 21, 1915.

To the Members of the Council, Gentlemen:

Motion No. 43 (*Approval of Program for* 1915 *Annual Meeting*) has received a majority of affirmative votes.

Chairman Frank H. Freericks, of Section on Education and Legislation, wishes a 'Joint Session of the Section on Education and Legislation with the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy," scheduled for Thursday, August 12, 1915, at 2 p. m., and to this, it is presumed, there will be no objection.

Motion No. 44 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 175. Walter C. Roessner, 204 W. Randolph St., Chicago, Ill., rec. by Wm. Gray and E. N. Gathercoal.

No. 176. Frank I. Given, M. D., Hillsboro, New Mexico, rec. by B. Ruppe and Wm. B. Day.

No. 177. Walter Arden Burkart, 4527 Garfield Ave., St. Louis, Mo., rec. by J. W. Mackelden and Glenn A. Burkart.

No. 178. Edward A. Ohm, 1667 Spring Lawn Ave., Cincinnati, Ohio, rec. by Theo. D. Wetterstroem and Frank Cain.

No. 179. Mrs. Janie A. Hagerty, Avon, S. D., rec. by Mrs. Hampton Ray Kenaston and Zada M. Cooper.

No. 180. Frederick Wm. Kisker, 806 Academy Ave., Cincinnati, Ohio, rec. by Frank Cain and Wm. B. Day (for reinstatement).

No. 181. Cornelius Beukma, 1215 South Akard St., Dallas, Texas, rec. by E. G. Eberle and C. A. Duncan.

No. 182. Wiliford Carl Hudgins, Grapevine, Texas, rec. by E. G. Eberle and Chester A. Duncan.

No. 183. William Stephen Disbrow, M. D., 151 Orchard St., Newark, N. J., rec. by E. A. Ruddiman and Wm. B. Day.

No. 184. Louis J. Burger, 215 N. Charles St., Baltimore, Md., rec. by Henry Kraemer and Freeman P. Stroup.

No. 185. Ralph Crawford Jennings, 114 William St., New York, N. Y., rec. by Donald McKesson and E. H. Gane.

No. 186. Jose Ramon Prieto, Agramonte 22, Cruces, Cuba, rec. by Zada M. Cooper and Wilbur J. Teeters.

No. 187. John Paul Snyder, 22 Hayes St., Norwich, New York, rec. by R. A. Stofer and J. Fred Windolph.

No. 188. James Numa Patterson, 486 Geary St., San Francisco, Cal., rec. by Frank Green and Hayden M. Simmons.

No. 189. Henry G. Momberg, 104 W. St. Clair St., Cincinnati, Ohio, rec. by Theo. D. Wetterstroem and Frank Cain.

No. 190. Frank M. Hayson, 743 N. LaSalle St., Chicago, Ill., rec. by F. H. Young and Wm. B. Day.

No. 191. Cosimo Ligorio, 1 Mott St., New York, N. Y., rec. by Wm. C. Anderson and Jacob H. Rehfuss.

No. 192. Samuel M. Fass, 112 Delencey St., New York, N. Y., rec. by Wm. C. Anderson and Jacob H. Rehfuss.

No. 193. Charles Jacob Koerber, Byberry Road, Torresdale, Pa., rec. by F. E. Stewart and J. W. Sturmer.

No. 194. Robert Wood Terry, Groveport, Ohio, rec. by Anna G. Bagley and Geo. B. Kauffman.

No. 195. Wm. E. Dyche, Texline, Texas, rec. by E. G. Eberle and C. A. Duncan.

No. 196. Peter Rupp, 541 Bermuda St., Algiers, La., rec. by Philip Asher and E. G. Eberle.

No. 197. John Richardson Taylor, New Iberia, La., rec. by Philip Asher and E. G. Eberle.

No. 198. Hypolite Rene Xrques, 917 N. Villere St., New Orleans, La., rec. by Philip Asher and E. G. Eberle.

No. 199. Marshall J. Demony, Mobile, Ala., rec. by Jas. C. Van Antwerp and E. G. Eberle.

No. 200. Adolph J. Toller, 417 West Third

St., Sioux City, Iowa, rec. by G. Scherling and Wm. B. Day.

No. 201. Louis Gershenfeld, 1732 South Ninth St., Philadelphia, Pa., rec. by C. H. LaWall and M. R. LaWall (prize membership for third year pharmacy, Philadelphia College of Pharmacy, awarded by Professor C. H. LaWall).

No. 202. Edward Frank Beranek, Ord, Neb., rec. by Henry R. Gering and Charles R. Sherman.

No. 203. Andrew B. McConnell, Omaha, Neb., rec. by Henry R. Gering and Charles R. Sherman.

No. 204. Karl M. Thelen, Shelby, Neb., rec. by Henry R. Gering and Charles R. Sherman.

No. 205. Harrie Jones, McClelland, Iowa, rec. by Henry R. Gering and Charles R. Sherman.

No. 206. Joseph F. McKinley, Leigh, Neb., rec. by Henry R. Gering and Charles R. Sherman.

No. 207. William Ludwig Schultz, Atkinson, Neb., rec. by Henry R. Gering and Charles R. Sherman.

No. 208. Will Brookley, Edgar, Neb., rec. by A. V. Pease and J. E. O'Brien.

No. 209. Emil J. Hermansky, 1415 Lincoln Ave., Omaha, Neb., rec. by Henry R. Gering and C. R. Sherman.

No. 210 Frederic Schuyler Pexton, 1006 Sixth St., Harlan, Iowa, rec. by Henry R. Gering and Charles R. Sherman.

No. 211. David Leslie Gaskill, 3721 Hamilton St., Omaha, Neb., rec. by Charles R. Sherman and Henry R. Gering.

No. 212. James G. McBride, University Place, Neb., rec. by Henry R. Gering and Charles R. Sherman.

No. 213. Walter Henry Cousins, 1804 Jackson St., Dallas, Texas, rec. by E. G. Eberle and R. H. Walker.

No. 214. Albert Martin Fischer, 523 E. Houston St., San Antonio, Texas, rec. by E. G. Eberle and R. H. Walker.

No. 215. Frank Adam Dinkler, Hennessey, Okla., rec. by E. G. Eberle and C. A. Duncan.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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WAR DEPARTMENT

List of changes of station covering period ending May 31, 1915, in the cases of Sergeants First Class and Sergeants, Hospital Corps, U. S. Army.

SERGEANTS FIRST CLASS.

Herbert N. Dean, from Field Hosp. 2, to the Philippine Islands.

Edward Crapo, from Ambulance Co. 2, to the Philippine Islands.

William E. Luse, from 18th Inf., to Ft. Huachuca, Ariz.

Geo. W. Manns, from Ft. Huachuca, to the 18th Infantry.

Maurice Kelly, from Port of Embarkation, to Ft. Monroe, Va.

Herman J. Weber, from Ft. Monroe, to Attending Surg. Office, Chicago.

John F. Newport, from Ft. Leavenworth, Kan., to Philippine Islands (July transport).

Robert S. McKenzie, from Letterman Gen. Hospital, to P. I. (June transport).

Charles Cooper Young, from P. I., to U. S. on furlough.

Joseph H. Hickson, from P. I., to U. S. on furlough.

Rush O. Day, from P. I. to U. S. on furlough.

Michael J. Hogan, from P. I., to U. S. on furlough.

Ray H. Couleman, from Ft. Porter, to Ft. McKinley, Me.

Francis M. Fitts, from Ft. McKinley, to Ft. Porter, N. Y.

Kenneth G Kincaid, from Letterman G. H., to under orders for P. I.

Thomas G. Bristow, from Letterman G. H., to Field Hosp. Co. 2.

Frank A. Crawford, from Transport "Logan," to Letterman Gen. Hosp.

August Siedler, from Letterman G. H., to transport "Logan."

Dell Timbrook, from Evacuation Hosp. 2, to 2d Division.

SERGEANTS.

John M. Toppins, from Army Med. School, to Ft. Sheridan, Ill.

John W. Friar, from Ft. Slocum, N. Y., to Hawaiian Department, H. T.

Joseph A. Plank, from Ft. Howard, Md., to Ft. Grant, C. Z.

George C. Burke, from P. I. to U. S. on furlough.

Nathan Markowitz, from P. I. to Ft. Robinson, Neb.

Morton Wiener, from Ft. Bayard, N. M., to P. I.

Harvey A. Utter, from Ft. Slocum, N. Y., to P. I.

Charles S. Sly, from Letterman G. H., to 22d Inf.

Raymond H. Brookins, from 22d Inf., to Letterman Gen. Hosp.

George A. Bissonette, from Columbus Bks., to Field Hosp Co. 1.

George A. Roberts, from Ft. Porter, N. Y., to Ft. Ethan Allen, Vt.

Marshall Ellis, Jr., from Ft. Terry, N. Y., to Ft. Michie, N. Y.

Warner P. Roden, from Evacuation Hosp. 2, to 2d Division.

Clyde A. Speight, from Evacuation Hosp. 2. to 2d Division.

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U. S. PUBLIC HEALTH NOTICE.

Acting Assistant Surgeon Wyatt Barnes. Granted three days' leave of absence from June 1, 1915. May 29, 1915.

Pharmacist J. V. LaGrange. Granted one day's leave of absence, May 28, 1915. May 28, 1915.

Pharmacist C. G. Carlton. Directed to proceed when necessary to the trachoma hospitals at Hindman, London, and Jackson, Ky., and to the trachoma hospitals to be established in Virginia and West Virginia to attend to details connected with their establishment and maintenance.

Pharmacist J. Y. Breckenridge, Jr. Directed to proceed immediately to Vineyard Haven, Mass., for temporary duty. May 29, 1915.

BOARDS CONVENED.

Medical officers assigned to duty on Coast Guard Retiring Boards as follows:

Baltimore, Md.: Surgeon C. W. Vogel, Assistant Surgeon J. M. Stewart.

Boston, Mass.: Surgeon B. W. Brown. Acting Assistant Surgeon F. H. Cleaves.

New York, N. Y.: Senior Surgeon G. W. Stoner. Passed Assistant Surgeon C. P. Knight. May 26, 1915.

Official:

A. H. GLENNAN,

Acting Surgeon-General.

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MARGARINE FROM SUNFLOWERS.

The production of margarine from sunflower seeds is the latest device attributed to the German Government to meet the expected scarcity of butter, according to a dispatch to the Exchange Telegraph Company from Amsterdam. The message says the Prussian Ministry of Railroads has ordered all station masters to plant sunflowers in every bit of available ground around the depots.

Sunflower seeds, it is claimed, yield an oil that can be used in the manufacture of substitutes for butter.

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FOR SMOKERS ONLY.

Cholly: When I was a boy, you know, the doctor said if I didn't stop smoking cigarettes I would become feeble-minded.

Miss Keen: Well, why didn't you stop?—London Evening Standard.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

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WILSON, C. F.,
From 355 E. 30th St., Chicago, Ill.
To 6857 S. State St., Chicago, Ill.

POWERS, EMMETT,
From 932 E. 25th St., Denver, Colo.
To 919 E. 25th St., Denver, Colo.

RILEY, J. A.,
From 355 W. 123d St., New York, N. Y.
To Residence unknown.

YEOMANS, S. C.,
From Long Beach, Cal.
To Residence unknown.

GORDON, JEAN,
From Englewood Hospital, Chicago, Ill.
To 1415 Byron Street.

HENRY, ARTHUR M.,
From Tallahasse, Fla.
To Homestead, Fla.

STAMM, DONALD F.,
From Chestertown, Md.
To Easton, Md.

VENNEMANN, H.,
From 200 W. Indiana Ave., St. Paul, Minn.
To 1023 White Bear Ave., St. Paul Minn.

ROON, LEO.
From 15 Main St., Port Washington, N. Y.
To Broadway and Baxter Ave., Elmhurst, L. I., N. Y.

DIETZ, H .W.,
From Field Hospital No. 4, Ft. Wm. McKinley, Rizal, P. I.
To residence unknown.

REPORT OF THE TREASURER OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

JANUARY 1, 1914, TO JANUARY 1, 1915.

Receipts.

Cash on hand January 1, 1914			$5599 39
Annual dues and Journal, 1912 (July 1, 1912, to Jan. 1, 1913)	$2 50		
Annual dues and Journal, 1913 (Jan. 1, 1913, to Jan. 1, 1914)	20 00		
Annual dues and Journal, 1914 (July 1, 1914, to Jan. 1, 1915)	5 00		
Annual dues and Journal, 1914 (Jan. 1, 1914, to Jan. 1, 1915)	7010 00		
Annual dues and Journal, 1915 (Jan. 1, 1915, to Jan. 1, 1916)	1655 00		
Annual dues and Journal, 1915 (July 1, 1915, to Jan. 1, 1916)	5 00		
Annual dues and Journal, 1916 (Jan. 1, 1916, to Jan. 1, 1917)	5 00		
		8702 50	
Dues only of the A. Ph. A.		24 00	
Sale of 6 parchment certificates @ $5 00	$30 00		
Sale of 3 paper certificates @ 3 00	9 00		
		39 00	
National Formulary		2732 03	
Badges and bars		26 60	
Proceedings		113 07	
Journal advertising		3564 03	
Journal subscriptions		300 84	
Miscellaneous		4 00	
Interest on bonds	$400 00		
Interest on deposit, International Bank of St. Louis	196 05		
		596 05	
Bank exchange		1 06	
Year-Book		3 20	
Reprints		58 75	
Sale of 90 solid gold buttons @ $1.00	90 00		
Sale of 131 gold-plated buttons @ 25 cents	32 75		
Sale of 34 gold-plated pins @ 25 cents	8 50		
		131 25	
Centennial Fund	$30 00		
Life Membership Fund	390 00		
Procter Monument Fund	600 00		
Ebert Legacy Fund, interest on bonds	80 00		
Ebert Legacy Fund, deposited for disbursement	30 09		
		1130 09	
Bank Interest from Jan. 1, 1914, to Jan. 1, 1915.			
Interest (Ebert Legacy Fund)	$35 05		
Interest (Procter Monument Fund)	60 35		
Interest (Rice Memorial Fund)	2 70		
		98 10	
Total			$23,123 96

Disbursements by Voucher Checks.

Jan.	5.	Check	2238	The National Drug Trade Conference		$25 00
"	5.	"	2239	John J. Miller, Journal		31 40
"	5.	"	2240	F. W. Nitardy, Section Education and Legislation		20 32
"	5.	"	2241	Ernest C. Marshall, Journal		45 75
"	9.	"	2242	Anna G. Bagley, clerical		30 00
"	9.	"	2243	Ernest C. Marshall, Proceedings and Year-Book		3 39
"	9.	"	2244	E. F. Greathead, printing, postage and stationery		11 90
"	9.	"	2245	The Stoneman Press Co., Journal	$333 73	
				Printing, postage and stationery	6 50	340 23

Jan.	9.	"	2246	C. H. Packard, membership		35 09
"	9.	"	2247	Wickersham Printing Co., National Formulary		23 33
"	9.	"	2248	J. H. Beal, clerical	60 00	
				Journal	13 72	
				Printing, postage and stationery	10 00	
				Freight, drayage and cartage	8 58	
				Journal for Reporters on Progress of Pharmacy	2 54	
				Miscellaneous	4 00	98 84
"	9.	"	2249	H. L. Taylor, Syllabus Comm		25 00
"	26.	"	2250	The Stoneman Press Co., Journal	63 50	
				Printing, postage and stationery	7 50	71 00
"	26.	"	2251	Irving-Pitt Mfg. Co., Unofficial Standards		28 03
"	26.	"	2252	Louis C. Hesse, printing, postage and stationery		6 50
"	26.	"	2253	W. T. Robinson, printing, postage and stationery		3 50
"	26.	"	2254	E. Fullerton Cook, National Formulary	21 29	
				Section on Pharmacopœias and Formulary	9 14	30 43
"	26.	"	2255	John C. Wallace, National Drug Trade Conference		52 45
"	26.	"	2256	W. T. Robinson, printing, postage and stationery		5 50
Feb.	19.	"	2257	Anna G. Bagley, clerical		30 00
"	19.	"	2258	H. M. Whelpley, printing, postage and stationery		79 60
"	19.	"	2259	St. Louis Paper, Can & Tube Co., miscellaneous		3 24
"	19.	"	2260	Midland Publishing Co., freight, drayage and express		6 40
"	19.	"	2261	Wickersham Printing Co., National Formulary		117 32
"	19.	"	2262	The Stoneman Press Co., Women's Section	10 00	
				Journal	447 95	
				Status of Pharmacists	3 00	460 95
"	19.	"	2263	The Stoneman Press Co., printing, postage and stationery		10 50
"	19.	"	2264	J. H. Beal, clerical	60 00	
				Journal	45 51	
				Journal for Reporters on Progress of Pharmacy	22 30	
				Printing, postage and stationery	10 25	
				Freight, express and drayage	7 92	
				Miscellaneous	2 65	148 63
"	27.	"	2265	James Arnold, National Formulary		6 00
"	27.	"	2266	Louis C. Hesse, printing, postage and stationery		4 00
"	27.	"	2267	The Stoneman Press Co., Journal	379 34	
				Printing, postage and stationery	11 50	
				Journal	14 25	405 09
March	5.	"	2268	McLean & Boone, stenographers		250 00
"	5.	"	2269	Whitehead & Hoag Co., buttons and pins		229 15
"	5.	"	2270	W. H. Chaflin Co., membership		4 21
"	5.	"	2271	A. Stores & Bement Co., membership		6 15
"	5.	"	2272	Samuel Ward Mfg. Co., membership		8 75
"	5.	"	2273	Rapid Service Press Co., membership		27 50

March	5.	"	2274	W. B. Day, Committee on Status of Pharmacy		44 65
"	5.	"	2275	Anna G. Bagley, clerical		30 00
"	28.	"	2276	The Stoneman Press Co., printing, postage and stationery		53 00
"	28.	"	2277	The Stoneman Press Co., Journal		532 83
"	28.	"	2278	The Midland Publishing Co., Women's Section		4 79
"	28.	"	2279	Whitehead-Hoag Co., buttons and pins		4 35
"	28.	"	2280	E. F. Greathead, printing, postage and stationery		20 13
"	28.	"	2281	F. W. Nitardy, Practical Pharmacy and Dispensing		9 24
"	28.	"	2282	Shallcross Printing & Stationery Co., miscellaneous		3 50
"	28.	"	2283	Louis C. Hesse, printing, postage and stationery		4 25
"	28.	"	2284	McLean & Boone, stenographers		100 00
"	28.	"	2285	J. H. Beal, clerical	60 00	
				Journal	26 42	
				Printing, postage and stationery	10 00	
				Freight, express and drayage	3 02	
				Miscellaneous	85	100 29
"	28.	"	2286	John C. Wallace, National Drug Trade Conference		41 25
"	28.	"	2287	J. H. Beal, National Drug Trade Conference		85 14
April	11.	"	2288	J. H. Beal, clerical	60 00	
				Journal	23 87	
				Printing, postage and stationery	22 60	
				Freight, express and drayage	2 63	
				Miscellaneous	2 00	111 10
"	11.	"	2289	J. H. Beal, salaries		1000.00
"	11.	"	2290	Ernest C. Marshall, salaries	125 00	
				Printing, postage and stationery	2 00	127 00
"	11.	"	2291	Anna G. Bagley, clerical		30 00
"	11.	"	2292	Wickersham Printing Co., National Formulary		92 00
"	11.	"	2293	Louis C. Hesse, printing, postage and stationery		7 00
"	29.	"	2294	F. W. Nitardy membership		2 00
"	29.	"	2295	Stoneman Press Co., Journal	3 00	
				Printing, postage and stationery	7 35	10 35
"	29.	"	2296	Louis C. Hesse, printing, postage and stationery		8 50
"	29.	"	2297	Ernest C. Marshall, salaries	125 00	
				Printing, postage and stationery	3 00	128 00
"	29.	"	2298	C. H. Packard, membership		85 20
"	29.	"	2299	E. F. Greathead, printing, postage and stationery		7 75
"	29.	"	2300	W. B. Day, Committee on Status of Pharmacy		5 53
"	29.	"	2301	Underwood Typewriter Co., National Formulary		4 48
"	29.	"	2302	E. Fullerton Cook, National Formulary		34 50
May	7.	"	2303	Ernest C. Marshall, salaries		125 00
"	7.	"	2304	Anna G. Bagley, clerical		30 00
"	7.	"	2305	J. W. England, printing, postage and stationery		29 18
"	7.	"	2306	Wickersham Printing Co., National Formulary		34 48

May	7.	"	2307	J. H. Beal, clerical	60 00	
				Journal	18 13	
				Printing, postage and stationery	10 00	
				Freight, express and drayage	2 09	
				Miscellaneous	4 50	94 72
"	7.	"	2308	Stoneman Press Co., Journal	416 71	
				Printing, postage and stationery	31 50	
				Printing, postage and stationery	8 50	
				Journal	32 20	488 91
"	22.	"	2309	E. F. Greathead, printing, postage and stationery		6 90
"	22.	"	2310	Stoneman Press Co., printing, postage and stationery		12 00
"	22.	"	2311	Louis C. Hesse, printing, postage and stationery		21 50
June	10.	"	2312	Geo. Wirsing, printing, postage and stationery		5 75
"	10.	"	2313	Anna G. Bagley, clerical		30 00
"	10.	"	2314	Pyne Point Press, Unofficial Standards		2 50
"	10.	"	2315	Wickersham Printing Co., National Formulary		23 00
"	10.	"	2316	E. F. Greathead, printing, postage and stationery		11 90
"	10.	"	2317	Louis C. Hesse, printing, postage and stationery		3 00
"	10.	"	2318	Ernest C. Marshall, Journal	18 50	
				Salaries	125 00	
				Printing, postage and stationery	15 40	
				Miscellaneous	3 25	162 15
"	10.	"	2319	The Stoneman Press Co., Journal	429 57	
				Proceedings and Year-Book	23 00	
				Journal	10 35	
				Proceedings and Year-Book	1689 50	2152 42
"	10.	"	2320	Midland Publishing Co., printing, postage and stationery		12 21
"	22.	"	2321	J. H. Beal, salaries		666 66
"	22.	"	2322	J. H. Beal, clerical	60 00	
				Journal	33 30	
				Printing, postage and stationery	10 00	
				Freight, express and drayage	6 67	
				Miscellaneous	1 20	111 17
July	1.	"	2323	Louis C. Hesse, printing, postage and stationery		6 50
"	1.	"	2324	E. F. Greathead, printing, postage and stationery		4 50
"	1.	"	2325	George M. Beringer, Committee on Unofficial Standards		33 21
"	1.	"	2326	Frank L. McCartney, membership		22 00
"	1.	"	2327	Stoneman Press Co., Journal	483 88	
				Printing, postage and stationery	14 25	
				Year-Book	3 10	501 23
"	1.	"	2328	Ernest C. Marshall, miscellaneous	12 75	
				Journal	17 96	
				Clerical	60 00	
				Year-Book	244 99	
				Printing, postage and stationery	3 15	338 85

July	7.	"	2329	Ernest C. Marshall, salaries		125 00
"	23.	"	2330	C. Lewis Diehl, salary as reporter from Jan. 1, 1914, to July 1, 1914		600 00
August	8.	"	2331	Hammond Typewriter Co., printing, postage and stationery		1 57
"	8.	"	2332	J. W. England, salary	150 00	
				Printing, postage and stationery	35 03	185 03
"	8.	"	2333	E. F. Greathead, printing, postage and stationery		11 90
"	8.	"	2334	Howe Addressing Co., printing, postage and stationery		4 60
"	8.	"	2335	Freeman Printing Co., printing, postage and stationery		15 00
"	8.	"	2336	W. M. Welch, Mfg. Co., certificates		30 00
"	8.	"	2337	Wickersham Printing Co., National Formulary		94 32
"	8.	"	2338	H. K. Myers, insurance		2 75
"	8.	"	2339	F. W. Nitardy, buttons and pins	1 75	
				Practical Pharmacy and Dispensing	14 80	16 55
"	8.	"	2340	A. H. Fetting, badges and bars		14 00
"	8.	"	2341	E. Fullerton Cook, National Formulary		46 98
"	8.	"	2342	Wilkinson Bros. Co., National Formulary		5 00
"	8.	"	2343	Henry M. Whelpley, printing, postage and stationery	91 07	
				Miscellaneous	18 65	
				Express	22	109 94
"	8.	"	2344	Stoneman Press Co., Journal	418 97	
				National Formulary	9 50	
				Year-Book and Proceedings	32 50	460 97
"	8.	"	2345	Ernest C. Marshall, miscellaneous	97	
				Express	15	
				Printing, postage and stationery	32 87	
				Clerical expenses, Secretary's office	60 00	
				Journal	16 65	
				Traveling expenses	16 75	
				Salary	375 00	502 39
"	8.	"	2346	Louis C. Hesse, printing, postage and stationery		21 25
"	8.	"	2347	J. H. Beal, printing, postage and stationery	6 70	
				Express	2 93	
				Miscellaneous	1 75	11 38
"	8.	"	2348	John Block, certificates		10 00
"	8.	"	2349	Henry M. Whelpley, salary Jan. 1 to July 1		500 00
"	8.	"	2350	Whitehead & Hoag Co., buttons and pins		50 00
Sept.	7.	"	2351	Stoneman Press Co., printing, postage and stationery	28 00	
				Proceedings and Year-Book	151 01	
				Journal	527 75	706 76
"	7.	"	2352	The Gast Bank Note Co., certificates of membership and new stone		37 50
"	7.	"	2353	E. F. Greathead, printing, postage and stationery		11 90
"	7.	"	2354	Louis C. Hesse, buttons and pins	3 50	
				Printing, postage and stationery	5 25	8 75

Sept.	7.	"	2355	Ernest C. Marshall, clerical expenses, Secretary's office	90 00	
				Traveling expenses	49 27	
				Journal	22 02	
				Freight, express and drayage	6 62	
				Miscellaneous	1 85	
				Printing, postage and stationery	8 86	
				Salary	250 00	428 62
"	7.	"	2356	Thomas F. Main, miscellaneous	82	
				Printing, postage and stationery	10 76	11 58
"	10.	"	2357	Diehl Office Equipment Co., journal		5 55
"	10.	"	2358	Freeman Printing Co., printing, postage and stationery		18 13
"	10.	"	2359	Geo. M. Beringer, printing, postage and stastationery		29 00
"	10.	"	2360	Howe Addressing Co., printing, postage and stationery		3 45
"	10.	"	2361	C. H. Packard, membership		97 75
"	10.	"	2362	C. H. Packard, membership		140 42
"	10.	"	2363	R. A. Kuever, stenographers		1 50
"	10.	"	2364	Clyde M. Snow, printing, postage and stationery		2 10
"	10.	"	2365	C. Lewis Diehl, National Formulary		21 20
"	24.	"	2366	J. W. England, printing, postage and stationery		17 99
"	24.	"	2367	J. W. England, traveling expenses		57 00
Oct.	1.	"	2368	Louis C. Hesse, printing, postage and stationery		2 75
"	1.	"	2369	W. T. Robinson, printing, postage and stationery		5 50
"	1.	"	2370	E. Fullerton Cook, expenses exhibit of U. S. P. and N. F. Committee		37 15
"	1.	"	2371	S. L. Hilton, expenses attending National Formulary Meeting		44 65
"	1.	"	2372	Clyde M. Snow, expenses attending National Formulary Meeting		30 28
"	1.	"	2373	George M. Beringer, expenses attending National Formulary Meeting		46 39
"	1.	"	2374	E. Fullerton Cook, expenses attending National Formulary Meeting		39 00
"	1.	"	2375	C. Lewis Diehl, expenses attending National Formulary Meeting		32 25
"	1.	"	2376	Edsel A. Ruddiman, Section on Scientific Papers		10 40
"	1.	"	2377	L. D. Havenhill, Pharmacopœias and Formulary		9 43
"	1.	"	2378	E. N. Gathercoal, membership		12 00
"	5.	"	2379	Louis C. Hesse, printing, postage and stationery		4 75
"	5.	"	2380	F. W. Nitardy, Practical Pharmacy and Dispensing		1 35
"	5.	"	2381	H. M. Whelpley, traveling expenses	61 35	
				Printing, postage and stationery	54 42	
				Miscellaneous	6 80	
				Express	1 07	123 64

Oct.	7.	"	2382	W. B. Day, clerical	20 25		
				Printing, postage and stationery	5 00		
				National Formulary	1 71		
				Express	2 67	29	63
"	7.	"	2383	E. C. Marshall, salaries	187 50		
				Clerical	48 00		
				Journal	3 30		
				Year-Book	21	239	01
"	7.	"	2384	J. G. Godding, Women's Section		6	54
"	7.	"	2385	Walter J. Watson, studio journal		2	00
"	7.	"	2386	Hammond Typewriter Co., journal		7	40
"	9.	"	2387	Wickersham Printing Co., National Formulary		69	00
"	9.	"	2388	Stoneman Press Co., Journal		473	57
"	9.	"	2389	Midland Publishing Co., Women's Section	5 65		
				Journal	4 89	10	54
"	20.	"	2390	W. T. Robinson, printing, postage and stationery		41	50
"	20.	"	2391	W. B. Day, printing, postage and stationery		50	00
"	20.	"	2392	H. M. Whelpley, printing, postage and stationery		21	20
"	20.	"	2393	Louis C. Hesse, printing, postage and stationery		21	75
"	20.	"	2394	Fidelity & Deposit Co., premium on Treasurer's bond		37	50
"	20.	"	2395	Stoneman Press, Journal		36	00
"	20.	"	2396	H. V. Arny, expenses attending National Formulary Meeting		9	00
"	20.	"	2397	W. R. White, membership		9	00
"	20.	"	2398	George M. Beringer, Committee on Unofficial Standards		28	39
"	29.	"	2399	Louis C. Hesse, printing, postage and stationery		4	25
"	29.	"	2400	E. F. Greathead, printing, postage and stationery		18	80
"	29.	"	2401	Louis C. Hesse, printing, postage and stationery		1	25
"	29.	"	2402	National Committee on Pharmaceutical Syllabus, National Syllabus Committee		25	00
Nov.	3.	"	2403	A. H. Fetting, badges and bars		7	10
"	3.	"	2404	Armstrong & Okey, stenographers		379	18
"	10.	"	2405	W. B. Day, clerical	40 00		
				Printing, postage and stationery	10 00		
				National Formulary	1 05	51	05
"	10.	"	2406	Ohio State Telephone Co., Journal		10	00
"	10.	"	2407	Diehl Office Equipment Co., Journal		2	15
"	10	"	2408	Stoneman Press Co., Journal		402	74
"	10.	"	2409	E. C. Marshall, salaries		187	50
"	10.	"	2410	E. C. Marshall, Journal	49 82		
				Clerical	46 00		
				Printing, postage and stationery	10 50	106	32
"	13.	"	2411	James Arnold, National Formulary		19	20
"	13.	"	2412	J. B. Lippincott Co., National Formulary		8	00
"	13.	"	2413	Wickersham Printing Co., National Formulary		27	02

Nov.	14.	"	2414	Louis C. Hesse, printing, postage and stationery		2 75
"	14.	"	2415	James Arnold, Committee on Unofficial Standards		8 50
"	14.	"	2416	E. F. Greathead, printing, postage and stationery		3 25
"	17.	"	2417	A. J. Eggers & Co., Section on Education and Legislation		7 75
"	17.	"	2418	E. Fullerton Cook, Section on Pharmacopœias and Formulary		5 00
"	17.	"	2419	E. Fullerton Cook, expenses of exhibit on Section on Pharmacopœias and Formulary		13 29
"	19.	"	2420	E. Fullerton Cook, National Formulary		41 79
"	19.	"	2421	George M. Beringer, Committee on Unofficial Standards		34 78
"	28.	"	2422	Blumenberg Press, printing, postage and stationery		4 50
Dec.	7.	"	2423	Louis C. Hesse, printing, postage and stationery		1 25
"	7.	"	2424	F. T. Gordon, printing, postage and stationery		5 00
"	10.	"	2425	W. B. Day, traveling expenses		27 95
"	10.	"	2426	W. B. Day, clerical	32 00	
				Printing, postage and stationery	10 00	
				National Formulary	1 02	43 02
"	10.	"	2427	Stoneman Press Co., Journal		410 93
"	10.	"	2428	Ernest C. Marshall, salaries		187 50
"	10.	"	2429	Diehl Office Equipment Co., printing, postage and stationery		1 75
"	10.	"	2430	E. C. Marshall, clerical	60 00	
				Printing, postage and stationery	10 00	
				Journal	19 06	
				Express	30	
				Miscellaneous	19	89 55
"	10.	"	2431	Stoneman Press Co., Journal		25 65
"	10.	"	2432	Hammond Typewriter Co., Journal		3 00
"	10.	"	2433	E. Fullerton Cook, printing, postage and stationery		1 72
"	10.	"	2433½	Theo. C. Hagenow, membership (St. Louis Branch)		47 00
"	10.	"	2434	Otto Raubenheimer, expense attending N. F. Committee		48 00
"	17.	"	2435	Louis C. Hesse, printing, postage and stationery		1 25
"	15.	"	2436	E. F. Cook, National Formulary		4 20
"	15.	"	2437	W. L. Scoville, National Formulary		5 61
"	15.	"	2438	Louis C. Hesse, printing, postage and stationery		1 25
"	15.	"	2439	Wilkinson Bros. & Co., National Formulary		20 90
"	18.	"	2440	E. F. Greathead, printing, postage and stationery		11 90
"	22.	"	2441	H. M. Whelpley, salaries		500 00
"	22.	"	2442	W. B. Day, salaries		250 00
"	24.	"	2443	G. D. Spiker & Son, miscellaneous		43 89
"	24.	"	2444	John C. Wallace, National Drug Trade Conference		47 56

Dec.	24.	"	2445	H. M. Whelpley, printing, postage and stationery	50 35	
				Miscellaneous	3 50	53 85
"	24.	"	2446	J. W. England, salaries		150 00
"	24.	"	2447	J. H. Beal, freight, express and drayage	84 36	
				Traveling expenses	18 30	102 66
"	30.	"	2448	J. W. England, printing, postage and stationery		41 12
"	30.	"	2449	Louis C. Hesse, printing, postage and stationery		15 50
"	30.	"	2450	Chas. M. Woodruff, National Drug Trade Conference		50 00
"	30.	"	2451	C. Lewis Diehl, salaries		600 00
				Total		$20,374 30

Cash Received and Disbursed for Ebert Legacy Fund by Check.

Jan.	16.	Check	2117	Theodore Flynn, village collector, opening of Elder Lane	$14 20	
"	28.	"	2118	Carlton Prouty, collector real estate tax	15 89	30 09

Cash Received and Disbursed Without Checks.

Centennial Fund	$30 00	
Life Membership Fund	390 00	
Ebert Legacy Fund	80 00	
Procter Monument Fund	600 00	1100 00

Interest from Jan. 1, 1914, to Jan. 1, 1915.

Ebert Legacy Fund	$35 05	
Procter Monument Fund	60 35	
Rice Memorial Fund	2 70	98 10
Total amount of disbursements		$21,602 49

SUMMARY OF DISBURSEMENTS.

Salaries	$6229 16
Journal	5863 32
Printing, postage and stationery	1287 76
Clerical expenses, Secretary's office	996 25
National Formulary	732 90
Drayage, freight and express	135 63
Miscellaneous expenses	116 36
Stenographers	730 68
Traveling expenses	230 62
Committee on Membership	497 07
Committee on Unofficial Standards	135 41
Proceedings and Year-Book	2147 70
Buttons and pins	288 75
Certificates	77 50
Premium on Treasurer's bond	37 50
Insurance	2 75
Journal for Reporters on Progress of Pharmacy	24 84
Section on Scientific Papers	10 40
Section on Education and Legislation	28 07
Section on Practical Pharmacy	25 39
Section on Pharmacopœias and Formularies	23 57
Women's Section	26 98
National Syllabus Committee	50 00
National Drug Trade Conference	301 40
Status of Pharmacists in Government Service	53 18

Badges and bars	21 10		
Traveling expenses attending National Formulary Committee	249 57		
Expenses Exhibit on Pharmacopœias and Formulary	50 44	$20,374 30	
Payment out of Ebert Legacy Fund (taxes)		30 09	
To Ebert Legacy Fund	80 00		
To Centennial Fund	30 00		
To Life Membership Fund	390 00		
To Procter Monument Fund	600 00	1100 00	
Bank Interest from Jan. 1, 1914, to Jan. 1, 1915.			
Ebert Legacy Fund	$35 05		
Procter Monument Fund	60 35		
Rice Memorial Fund	2 70	98 10	
Total amount of disbursements		$21,602 49	
Cash on hand, January 1, 1915		1,521 47	
Total		$23,123 96	

A. Ph. A. Appropriations and Disbursements, January 1, 1915.

	Appropriations	Expenditures
Salaries	$6500 00	$6229 16
Journal	6000 00	5863 32
Printing, postage and stationery	1400 00	1287 76
Clerical expenses, Secretary's office	1000 00	996 25
National Formulary	1000 00	732 90
Freight, expressage and drayage	150 00	135 63
Miscellaneous	300 00	116 36
Stenographers	730 68	730 68
Traveling expenses	300 00	230 62
Committee on Membership	750 00	497 07
Committee on Unofficial Standards	300 00	135 41
Proceedings and Year-Book	2500 00	2147 70
Buttons and pins	300 00	288 75
Certificates	50 00	77 50
Premium on Treasurer's bond	50 00	37 50
Journal for reporters on Progress of Pharmacy	35 00	24 84
Section on Scientific Papers	25 00	10 40
Section on Education and Legislation	25 00	28 07
Section on commercial interest	25 00	
Section on Practical Pharmacy	25 00	25 39
Section on Historical Pharmacy	50 00	
Section on Pharmacopœias and Formularies	75 00	23 57
Women's Section	25 00	26 98
National Syllabus Committee	50 00	50 00
National Drug Trade Conferenceœ	275 00	301 40
Status of Pharmacist in Government Service	100 00	53 18
Badges and bars	50 00	21 10
Traveling expenses attending National Formulary Committee	400 00	249 57
Section on Pharmacopœias	50 00	
Insurance	50 00	2 75
Expense of Exhibit on Pharmacopœias and Formulary	50 00	50 44
Appropriations	$22,640 68	$20,374 30
Expenditures	20,374 30	
Unexpended balance	$2,266 38	

The Permanent Funds, January 1, 1915.

	1914	1915
Life Membership Fund	$19699 03	$20363 05
Endowment Fund	5828 07	6063 51
Ebert Leacy Fund	3144 22	3290 42
Centennial Fund	1039 40	1081 38
	$32446 67	$33634 71
		32446 67
Net increase during fiscal year		$ 1188 04

The Association Assets, January 1, 1915.

Cash in bank	$ 1521 47		
Bonds	10000 00		
Available assets		$11521 47	
Permanent funds		33634 71	
Total Association assets			$45156 18
Procter Monument Fund (held in trust)		$ 7473 90	
College Prize Fund (held in trust)		35 54	
Rice Memorial Fund (held in trust)		170 91	
			7680 35
Grand total			$52836 43

DETAILED STATEMENT OF THE SEVERAL FUNDS.

Life Membership Fund. (Established in 1870.)

Balance from old account viz.:			
Massachusetts State bonds			$13000 00
Boston Penny Savings Bank, January 1, 1914		$6699 03	
Interest on deposit in Boston Penny Savings Bank	$274 02		
Interest on Massachusetts State bonds	390 00		
Deposited in Boston Penny Savings Bank (January 1, 1914, to January 1, 1915)		664 02	
			7363 05
Total on hand January 1, 1915			$20363 05

Ebert Prize Fund. (Established in 1873.)

Balance from old account	$ 1039 40
Interest on deposit in Boston Penny Savings Bank	41 98
Total on hand January 1, 1915	$ 1081 38

Centennial Fund. (Established in 1877.)

Balance from old account viz.:			
Massachusetts 3% registered bond			$ 1000 00
Boston Penny Savings Bank, January 1, 1914		$1735 95	
Interest on bond	$30 00		
Interest on Boston Penny Savings Bank	70 40		
Deposited in Boston Penny Savings Bank (January 1, 1914, to January 1, 1915)		100 40	1836 35
Total on hand January 1, 1915			$ 2836 35

Endowment Fund. (Established in 1906.)

Balance from old account January 1, 1914	$5828 07
Interest on deposit in Boston Penny Savings Bank	235 44
Total on hand January 1, 1915	$6063 51

Ebert Legacy Fund. (Established in 1906.)

St. Louis City registered gold bond			$2000 00
Balance from old account	$1144 22		
Check not cashed (not yet due)	$61 24		
Interest on St. Louis	80 00		
Interest on deposit International Bank	35 05	176 29	$1320 51
Disbursed for taxes	15 89		
Disbursed for opening Elder Lane	14 20	30 09	
Cash on hand January 1, 1915			1290 42
Total on hand January 1, 1915			$3290 42

Procter Monument Fund. (Established in 1904.)
(Held in Trust.)

Balance from old account, viz.:			
Placed on time deposit in International Bank January 1, 1914		$4627 37	
Interest on deposit @ 4% January 1 to December 31, 1914		185 09	$4812 46
Certificate No. 61358 of deposit in International Bank January 1, 1914	$2001 09		
Interest on deposit in International Bank, January 1 to December 31, 1914	60 35		
Contributions, viz.:			
August 2. Henry S. Welcome	$100 00		
December 31. C. E. Hires	500 00	600 00	
Cash on hand International Bank, January 1, 1915			$2661 44
Total on hand January 1, 1915			$7473 90

College Prize Fund. (Established in 1905.)
(Held in Trust.)

Balance from old account January 1, 1914	$34 18
Interest on Boston Penny Savings Bank	1 36
Total on hand January 1, 1915	$35 54

Rice Memorial Fund. (Established in 1913.)
(Held in Trust.)

Balance from old account January 1, 1914	$168 21
Interest on deposit, International Bank, January 1, 1914, to January 1, 1915	2 70
Total on hand January 1, 1915	$170 91

January 1, 1915. HENRY M. WHELPLEY, Treasurer.

REPORT ON INVESTED FUNDS OF THE ASSOCIATION.

ST. LOUIS, MO., June 11, 1915.

To the Officers and Members of the American Pharmaceutical Association:

We, the undersigned, have, in accordance with Rule 8 of General Rules of Finance, examined the securities contained in the Association Box (4227) at the Title Guaranty Trust Co., St. Louis, and found the following:

Ebert Legacy Fund.

St. Louis Bond No. 766	$ 2,000 00

A. Ph. A. General Fund Bonds.

5 St. Louis City Reg. 4 percent Bonds Nos. 705, 706, 707, 708, 709	$ 5,000 00
1 St. Louis City Reg. 4 percent Bond, No. 717	5,000 00
Total	$10,000 00

A. Ph. A. Centennial Fund Bond.

1 Mass. State Reg. 3 percent Bond, No. 1705	$ 1,000 00

A. Ph. A. Life Membership Fund Bonds.

1 Mass. State Reg. 3 percent Bond, No. 1701	$10,000 00
3 Mass. State Reg. 3 percent Bonds, Nos. 1702, 1703, 1704	3,000 00
Total	$13,000 00

A. Ph. A. Procter Monument Fund.

Certificate of Deposit, No. 62,205, dated January 2, 1915, International Bank of St. Louis (principal)	$ 4,812 46

(Signed) H. M. WHELPLEY,
Treasurer.

(Signed) FRED W. SULTAN,
Member, Auditing Committee.

Subscribed and sworn to before me this eleventh day of June, 1915.

(Seal) SIDNEY SCHUELE,
Notary Public, City of St. Louis, Missouri.

(My commission expires November 19, 1917. (Stamp.)

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WILLIAM MARTIN SEARBY

Born at Croft, Lincolnshire, England, January 21, 1835
Died in San Francisco, October 7, 1909



William Martin Searby

Fifty-fifth President of the
American Pharmaceutical Association

The Journal of the American Pharmaceutical Association

Volume IV AUGUST, 1915 No. 8

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The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

William Martin Searby

William Martin Searby, fifty-fifth President of the American Pharmaceutical Association, was born at Croft, Lincolnshire, England, January 21, 1835, where he also received his early education.

When fifteen years of age he passed his apprenticeship examination with the Pharmaceutical Society of Great Britain. In 1855 he entered the laboratory of the Royal Pharmaceutical Society of Great Britain at the Square, London, where he was granted special advantages by Mr. Braithwaite, Professor Redwood's assistant, in charge of the laboratory.

He passed the major examinations in 1856 at Apothecaries' Hall, London, and thereafter engaged in the drug business with his brother, Wright Searby, at Norwich. Four years later he came to Victoria, B. C., where he opened a pharmacy and continued in business here until 1865, when he located in San Francisco.

The fire, following the earthquake of 1906, destroyed the several stores Professor Searby was interested in, his home and with it his library and other valuable personal belongings. The climax of his trials came in the loss of his life companion, whose death was hastened by their heartrending experiences.

It was largely through Professor Searby's efforts that the California Pharmaceutical Society and California College of Pharmacy were organized; to these he always remained loyal and in them was ever a sincere and earnest worker. The California Pharmaceutical Society bestowed many honors upon him and several times chose him for presiding officer. He was dean of the California College of Pharmacy and held the chair of Materia Medica up to the time of his demise.

Professor Searby's activities in the American Pharmaceutical Association date from 1882 and terminated with his death October 7, 1909. He served with distinction in various capacities and invariably discharged the duties of office conscientiously and efficiently. In 1907 he was elected president of the Association and presided over the deliberations of that body at the meeting in Hot Springs.

He was kind and courteous, very considerate of others, but if he differed in opinion with friends, he unhesitatingly expressed his views and unflinchingly stood for whatever he thought just and right. "The beauty and purity of his domestic life was a setting for his character: His graceful method of speaking, with his clearness in teaching, made him a leader."

Contributed and Selected

THE BRITISH PHARMACOPŒIA OF 1914.

From a British Point of View.

DR. FRED. B. KILMER.

The British citizen, and particularly the British pharmacist, is quite liable to manifest some restlessness whenever any new phase or change is brought into his daily routine. Hence, after a period of about sixteen years, the appearance of a new edition of the British Pharmacopœia has had an upsetting influence upon practitioners of medicine, and of pharmacy, and as is usual with the Britisher, his uneasiness finds its outward manifestation in the form of lengthy communications to the press, and in this particular case in numerous papers before medical and pharmaceutical meetings.

It is true that the new Pharmacopœia was issued at an inopportune time. It was originally scheduled to appear at a time about coincident with the opening of the great European war, but the official publication was postponed until the last day of December, 1914.

Many pharmacists are of the opinion that the publication might well have been deferred until the war was over, and some even go so far as to say that "no great injury would have been inflicted if the issuance had been postponed indefinitely."

A prominent feature of the publication of this edition was that, concurrently, there appeared numerous guides, handbooks and commentaries which seemed to convey the impression that the newly revised work was not in itself entirely complete. Immediately upon its publication there also appeared the usual number of medical and pharmaceutical critics, who assailed it from almost every standpoint, one of them even going so far as to state that it was in its essence simply a wholesalers' Pharmacopœia, the result of an organized effort on the part of the wholesale trade, combined with an autocratic tendency on the part of certain physicians whose recommendations had been accepted. A very prominent pharmacist in Scotland stated that "the benefits arising from all of the changes are nil, and the folly of some of them will be apparent when several people have been poisoned."

On the other hand, it is charged that it is a physicians' Pharmacopœia, and that the pharmacist had little or no hand in its revision. There is some force in this statement when we consider that the revision of the British Pharmacopœia is by virtue of an Act of Parliament vested in the General Medical Council, a body made up entirely of medical men. In the present revision the Council had recourse to a so-called Pharmacopœial Conference made up of members of its own body and five pharmacists recommended by the Pharmaceutical Societies of the United Kingdom, also of a Committee of Reference in Pharmacy nominated by the Pharmaceutical Society of Great Britain and Ireland.

It would appear that the pharmaceutical bodies were without power in the work of revision, and it is claimed that they had but little influence in the present production. Significant also is the fact that when the revision was all over but the shouting, the Pharmaceutical Society of Great Britain took the following action:

"Having regard to the highly unsatisfactory position of pharmacists in relation to the production of the British Pharmacopœia, this Society should give no further assistance to the work of revision under present conditions."

Taking up in detail some of the criticisms which have been propounded by the users of the new British Pharmacopœia, we find, as might be expected, several strong objections to alterations, readjustments, additions and eliminations; in other words, there would naturally arise in the British mind an objection to any change.

The additions, to the number of forty-three, consist in the most part of pharmaceutical preparations and substances which are well known. Of course the critics have been free to ask the question, "why was one preparation included and another not included?"

The complaint is made that some of the substances omitted are still in frequent use. Among these is the world-wide household remedy—saffron.

A strong protest has arisen in regard to some of the alterations in names, but the revision authorities have claimed that this alteration was, for the most part, a modification, with the intent of giving a more exact definition, and in some instances the alteration of the name is due to a modification of the process.

A feature of some of the alterations is that a number of the solid extracts heretofore known as alcoholic extracts (being hard pasty extracts), now appear in the Pharmacopœia as dry extracts, and in certain instances are standardized. This feature has, in a great measure, been the subject of commendation.

Alteration in the composition of galenical preparations has called forth both praise and criticism. It has been conceded that the bases of ointments have been improved, as well as the bases of various lozenges, and the revisers claim that the alterations in the composition of galenical preparations have been arrived at as the result of careful experimental work.

A flood of criticism has arisen in respect to the alterations in potency. Ten galenical preparations have been increased in strength, some of them it is stated have been dangerously increased. For example—the tincture of aconite strength has been doubled, the tincture of opium has been increased one-third, and the tincture of strophanthus has been increased four times. Indeed, the increase in strength has been mainly in very potent preparations.

Thirteen preparations have been made weaker. A notable decrease in strength is that of the emplastrum belladonnæ; it is now one-half the former strength. The tincture of digitalis is one-fifth weaker, and the tincture of nux vomica is half the former strength. The remarkable, and so-called "dangerous," alteration in the fourfold increase of the tincture of strophanthus, has brought out columns of comment. The tincture of opium, or the well known laudanum, has been increased to a strength so as to require the prescription of a medical practitioner, or conformity to the poisons schedule act, before it can be given out.

But attention is called to the fact that the alterations in strength in the British

Pharmacopœia of 1914 have been very small when compared with the last previous revision of 1898. A host of commenters agree that the advance made in the standardization, especially of vegetable drugs, has been disappointing, and that there still remain numerous preparations in which quantitative tests might have been applied with advantage.

For a conservative body the revisers took a long stride forward in adopting the metric system, and as one writer puts it, placed upon the already overburdened dispensers "the honor, the duty and the inconvenience of introducing the metric system into pharmacy." Strong objection has arisen to inconveniences which will arise in dispensing and prescribing, and the calculation of dosage under the changed system.

The book gives a table of equivalents which it is claimed is not consistent. The adoption of average doses has brought about considerable discussion both in medical and pharmaceutical publications. The British Pharmacopœia clearly lays the responsibility for dispensing excessive doses on the shoulders of the pharmacist. The Pharmacopœia states:

"It must be clearly understood that the "doses" mentioned in the Pharmacopœia are not authoritatively enjoined by the Council as binding upon prescribers. They are intended merely for general guidance and represent, in each instance, the average range of the quantities which, in ordinary cases, are usually prescribed for adults. The medical practitioner will exercise his own judgment and act on his own responsibility in respect to the amount of any therapeutic agent he may prescribe or administer. Where, however, an unusually large dose appears to satisfy himself that the prescriber's intention has been correctly interpreted."

The pharmacists are much alarmed over the dangers liable to arise in the liability to excessive doses by reason of the changed system of weights and measures and the changed strength in many potent preparations.

Reams of paper have been filled with condemnation of the adoption by the revisers of the term "mil" (the contraction of millilitre) in the place of cc. to express cubic centimeter. This is characterized by friendly critics as an "unfortunate decision and places the British Pharmacopœia in a very insular position, at variance with all scientific literature and all other Pharmacopœias." It is predicted that the word will not be used in practice.

In reference to the use of the word "mil" as a substitute for c. c. the "Chemist & Druggist" states that it is strange that countries which have never used the metric system in its completeness should begin by making a muddle of one very important part of it. The use of the term "millilitre" and its abbreviation "mil" has never been known either in pharmacy or chemistry in the countries which use the metric system, and why the British should have taken a new and "wrong" line is difficult to understand.

Abbreviations are a feature of the newer British Pharmacopœia, and while the English mind is quite fond of coining abbreviations, critics complain that some of the official ones go beyond the limit for brevity. They are styled as "ugly" and "many of the abbreviations are horrible."

Worthy of attention is the fact that no critic has called attention to errors, and it is claimed that they are remarkably rare, which brings to mind the rather

lengthy table of errata that was published conjointly with the appearance of the Eighth Revision of the U. S. P.

Americans are accused of boasting, but no eulogist on the United States Pharmacopœia ever had the fortitude to reach to the following made in England:

"On the whole the compilers may be said to have succeeded in producing a Pharmacopœia which may be pronounced, without hesitation or reserve, to be the best so far published in this (England) or any other country."

In order to maintain neutrality we place against the foregoing the opinion of a well known German pharmacist, Prof. Raubenheimer, who states that "on the whole the new British Pharmacopœia is no credit to British pharmacy or to pharmacy in general."

A writer in one of the Medical Journals says:

"The new Pharmacopœia has been received very calmly in medical circles. The fact is that its issue has little effect on the present generation of practitioners, whose prescribing habits are fixed and are not to be upset by the edict of the General Medical Council. The alterations are felt as occasion for grumbling rather than gratitude. Pharmacists and students are more concerned than the medical practitioner, and perhaps after all the issue of the new volume is not so earth-shaking an event as its authors imagined it would be."

A very well known British pharmacist writes me:

"I fail to recognize any real advancement medically or scientifically in the new British Pharmacopœia."

One of the most illuminating and candid reviews of the work has been that of George Lunan, F. C. S., who was a member of the Committee of Reference in Pharmacy, and whose high ability is conceded by all. He states:

"This is a national book of medicine. It represents to the practitioner the official guide to his prescriptions, because it represents only ascertained and tried materia medica. These are protected by practical standards for his use."

The British Pharmacopœia for 1914 is an Imperial Pharmacopœia made to suit the needs of the whole Empire; hence it must be conceded that it has been no small task to put together a work adapted to a people of such varied races, and to meet the conditions which prevail in a realm which reaches from the North to the South Pole, and upon which the sun continually shines.

In the multitude of publications dealing with applied medicine, the 1914 British Pharmacopœia stands by itself—typical of the nation, stubbornly progressive, accurate and reliable.

Let us not mistake the attitude of the British pharmacist throughout the world in regard to his Pharmacopœia. After he recovers from his first shock of having a new official book of Materia Medica thrust upon him, and has relieved himself by a few grumblings, he will begin a most careful study of the book. He will know it from cover to cover. There is one trait in the British pharmacist that gives him a high rank in his life work—he knows his Pharmacopœia and his Materia Medica, and he knows it most thoroughly. The British pharmacist will follow the Pharmacopœia as loyally and as devotedly as his fellow compatriots follow the King; he will uphold the Pharmacopœia as bravely as the British soldier upholds the Royal Ensign.

THE PHARMACY AND MATERIA MEDICA OF THE BRITISH PHARMACOPŒIA OF 1914.*

GEORGE M. BERINGER.

The appearance of a revised pharmacopœia of one of the leading nations is an event of general pharmaceutical interest. The importance of such a revision from an American view-point, is greatly enhanced if the pharmacopœia revised is that of a nation whose consanguinity, language and practices are so closely allied to our own as are those of the British Isles. Hence, the appearance of a new British Pharmacopœia during the past year becomes one of the most important pharmaceutical events.

It is apparent that any attempt to review the pharmacy and materia medica of the Fifth Edition of the British Pharmacopœia within the time allotted for a paper presented to a pharmaceutical meeting, must necessarily be cursory and incomplete. Moreover, one is too prone to consider the volume from the view-point of American practice without realizing what has been the aim of the Medical Council and which, in the following statement in the preface, they claim to have accomplished: "has now been able to produce a British Pharmacopœia suitable for the whole Empire." This statement indicates to what extent that ideal of the British government, the solidarity of all of the people of the numerous divisions of the British Empire, has progressed. The present edition displaces not only the edition of 1898, but also the Indian and Colonial Addendum of 1900. The dismissal in the revision of so many of the drugs used exclusively, or nearly so, in the oriental British possessions, indicates the advancement of the movement for uniformity of medical standards and practice throughout the British Empire.

In this revision the Medical Council departed somewhat from the methods of the previous revisions and sought the co-operation of pharmaceutical, chemical and botanical authorities by instituting conferences and committees on reference and thus aimed to obtain information, advice and investigation from many experts outside of the Council.

In this revision the metric system of weights and measures is used throughout, even for the statement of doses, "in the expectation that in the near future the system will be generally adopted by British prescribers." "At the present time students and practitioners of medicine are accustomed to use the metric system in connection with the work of chemical, physical, physiological, pathological and pharmacological laboratories; it will doubtless facilitate the application of science to practice when the same system is used for therapeutic purposes also." We sincerely trust that in this respect the British practitioners of medicine, veterinary medicine, and pharmacy are more ready to adopt this innovation than have been their American brethren in these professions. The term "cubic centimeter" is displaced by "millilitre" and in the statement of doses in the metric system this is abbreviated to "mil" and the fractional portions are "decimil" and "centimil."

In the preface, it is recommended that prescribers cease to employ the long-used

* Read at meeting New Jersey Pharmaceutical Association, 1915.

symbols for drachm and ounce as they are apt to be misread, and are used at times to convey different meanings. The symbol ℥ for example "is to represent sometimes 480 grains, sometimes 437.5 grains and also to represent 1 fluid ounce."

The preface likewise defines what is meant by a percentage solution; "thus a solution of '1 in 10' or '10 per cent.' means that one gramme of a solid or one millilitre of a liquid is contained in ten millilitres of the solution." This statement is not strictly accurate nor is it in accord with the exact meaning of the word percentage.

In considering synonomy, only the most important of the synonyms employed in prescribing have been inserted. Abbreviations of the Latin titles have been adopted and published as a table in the Appendix. In this the revisers were undoubtedly influenced by a foreknowledge of the intent of the U. S. P. IX in this direction.

The acceptance of the principles of "The International Agreement" promulgated by the International Congress for the Unification of the Formulæ for Potent Drugs and Preparations held at Brussels in 1902, has necessitated some changes in this edition of the British Pharmacopœia. The practice of Great Britain as well as America has been to measure liquids by volume and solids by weight and this has been maintained instead of following the custom of continental practice and endorsed by that Agreement, of weighing liquids as well as solids.

The substances added are not numerous and are covered in a list of 43 titles. Cantharidin replaces Cantharis and Mylabris and is used in all of the galenicals in which these drugs were formerly directed, on the basis of the average content of 0.5 percent. of cantharidin in Cantharides which quite likely is the average yield of the pure active principle. This change has necessitated a change in titles of preparations to Acetum Cantharidini, Emplastrum Cantharidini, Tinctura Cantharidini, and Unguentum Cantharidini.

Diluted Hydriodic Acid is admitted for the purpose of making the syrup which is likewise on the list of admissions.

Cassia Fructus, cassia fistula pod, is admitted for the purpose of giving a formula for "Cassia Pulpa," which should more correctly be entitled an Extract.

Senna Fructus, the senna pod, is another new title. Senna pods are official in several of the European pharmacopœias and their use is extending likewise in the United States.

Under the title of Ipomea Radix the Orizaba Jalap Root is admitted with the synonym of Mexican Scammony Root. This has been done to permit its use as a substitute for the true Scammony Root for the preparation of Scammony Resin.

Scammony resin is defined as a mixture of resins obtained from Scammony Root or from Orizaba Jalap Root. This is an unfortunate exhibition of legalizing a specious fraud that has been extensively carried on in the substitution of the chemically different resin of ipomea for that of Scammony. The requirement of "not less than 75 percent. soluble in ether" shows how deliberate the purpose.

Cresol is one of the additions and as a preparation Liquor Cresol Saponatus made with castor oil and potassa soap, a good preparation with which we are not unfamiliar.

Formaldehyde is admitted and Liquor Formaldehydi Saponatus is a soft soap,

(from olive oil and potassium hydroxide), hydro-alcoholic solution of formaldehyde and should prove a useful addition to the antiseptics.

Among Ointments and Ointment bases we note that a formula for benzoinated prepared suet has been introduced and it is recommended that in India this should be employed instead of Benzoinated Lard in making ointments. Unguentum Lanæ Compositum, a mixture of prepared lard 40, wool fat 40, paraffin ointment 20, is a recruit with the synonym of Emollient Ointment. A veteran in American practice, Goulard's Cerate, with a modified formula with camphor omitted, is admitted under the title of Unguentum Plumbi Subacetatis.

The list of deletions is a formidable one of 168 titles. A number of these are oriental drugs that probably have gone out of use because of the change of medical practice in the colonies. There are, however, in this category a number of titles of old friends such as Camboge, Cimicifuga, Coca Leaves, Conium Fruit and Leaves, Crocus, Elaterium, Humulus, Jaborandi, Lupulin, Mezereum, Musk, Pareira, Physostigma, Sarsaparilla and Sumbul.

Among the preparations dismissed, we note a number of decoctions and infusions and the concentrated liquores introduced in the edition of 1898 for the purpose of permitting of the extemporaneous preparation of decoctions and infusions. It would seem that the "Liquores Concentrati" met with little favor and further that English practice is gradually being weaned from the copious draughts of infusions and decoctions of drugs.

Our British brethren have shown some further appreciation of the advantages of powdered extracts and have adopted the powdered form for a few additional extracts, notably, the extracts of belladonna, hyoscyamus, nux vomica and opium. The diluent directed in the extracts of belladonna and hyoscyamus is the powdered respective drug of determined alkaloidal content. In the extracts of nux vomica and opium, calcium phosphate is directed as the diluent and in the extract of strophanthus, milk sugar. The degree of fineness of the powder specified under extract of belladonna is a number 20 sieve. This certainly will yield a rather coarse powder. The menstruum directed for extract of belladonna and hyoscyamus is 70 percent. alcohol. A stronger alcoholic menstruum is necessary to obtain a powdered extract of proper strength and permanent fineness of powder. Where formulæ are given for both the liquid and the dry extracts of the same drug, the word "Siccum" is added to the title of the latter. It would seem to have been preferable to have uniformly used this term in the titles of all such dry extracts.

In the Latin titles 38 changes have been made. Most of these are of a minor character and for the purpose of more exactly defining the official articles or preparations. Aloe now covers both Aloe Barbadensis and Aloe Socotrinæ of the previous edition, and Senna Folia includes the former Senna Alexandrina and Senna Indica. Kino Eucalypti replaces the less appropriate Eucalypti Gummi, and Oleum Chaulmoogræ replaces Oleum Gynocardiæ. Among preparations, we note that Tinctura Iodi Fortis replaces Liquor Iodi Fortis and Tinctura Iodi Mitis replaces Tinctura Iodi. The stronger contains 10 Gm. of Iodine and 6 Gm. of Potassium iodide in 100 millilitres and corresponds closely to the Tincture of Iodine of the International Agreement. The Tincture of Iodine of the British

Pharmacopœia 1898, contained only 2.5 Gm. each of iodine and potassium iodide per 100 millilitres; hence, this is now to be known as the "weak."

Important changes in the strength of 41 preparations have been made. The reason for many of these is apparent; for some, however, the reason is not evident. The endeavor to harmonize the potent galenicals with the standards of the International Agreement accounts for the changes in Syrup of Ferrous Iodide, a number of the tinctures and in Mercury Ointment.

Syrup of Ferrous Iodide contains 5 percent. of ferrous iodide and 10 percent. of glucose as a preservative.

Tincture of Aconite is about twice as strong as that of the Pharmacopœia of 1898, and is directed to be made with 70 percent. alcohol and then assayed and standardized so that 100 mils contain 0.04 Gm. of the ether soluble alkaloids. This formula agrees in the menstruum with that directed by the Brussels protocol, and starts with 150 Gm. of aconite yielding doubtlessly a good preparation, but it would be difficult to establish that it is "approximately the same strength as the Tincture of Aconite of the International Agreement."

Tincture of Belladonna is to be made by percolating 100 Gm. of the powdered leaves with 70 percent. alcohol and in addition is standardized to contain 0.035 Gm. of the alkaloids in 100 millilitres.

Tinctures of Colchicum and Digitalis likewise agree closely with the requirements of the protocol.

Tincture of Nux Vomica is to be made from the Liquid Extract by diluting and is standardized so that 100 millilitres contain 0.125 Gm. of strychnine.

Tincture of Opium is made from the Gum Opium and standardized so that 100 millilitres contain 1 Gm. of anhydrous morphine. The product will correspond to the International Agreement in alkaloidal (not alcoholic) content and will be about one-third stronger than the Laudanum of the previous edition.

In Tincture of Strophanthus, we have a straddle. In attempting to comply with the requirement of the protocol 100 Gm. of ground seeds and 70 percent. alcohol are directed, but the de-fatting of the drug with ether is prescribed. The foot-note states that "this tincture is made with four times the proportion of seeds ordered by the previous pharmacopœia and it is approximately the same strength as the Tincture of the International Agreement." This formula is, however, subject to several criticisms. It is entirely proper to de-fat the drug before making the tincture, but the de-fatting should be with purified petroleum benzin and not with ether because the latter extracts a portion of the strophanthin. The percolation with ether should not be "until the liquid passes through colorless," but should be continued until a few drops evaporated from filter paper leave no greasy stain. Alcohol of 90 or 95 percent. will not entirely extract strophanthus in the proportion directed and much less will alcohol of 70 percent. serve this purpose. A more serious error is the direction to discontinue the percolation with the alcohol when 500 millilitres are obtained and then to add sufficient 70 percent. alcohol to obtain 1 litre. Under these conditions, the drug will probably be not more than one-half extracted.

The diluted acids, with the exceptions of Diluted Acetic Acid (5 percent. H $C_2H_3O_2$ and Diluted Hydrocyanic Acid (2 percent HCN), are now uniformly

10 percent. of the respective absolute acids, instead of the odd proportions of the 1898 Pharmacopœia which had Diluted Hydrochloric Acid 10.58 percent. HCl.; Diluted Nitric Acid 17.44 percent HNO_3; Diluted Phosphoric Acid 13.8 percent H_3PO_4; and Diluted Sulphuric Acid 13.65 percent H_2SO_4.

In the text, the Aromatic Waters are directed to be made by distilling the water in some cases with the drug and in other cases with the volatile oil. In Chapter XII of the Appendix under Alternative Preparations Sanctioned for Use in Tropical, Sub-tropical, and Other Parts of the British Empire, it is stated, "Aquæ Olei Anethi, Anisi, Carui, Cinnamomi, Foeniculi, Menthæ Piperitæ, Menthæ Viridis.—Each of these Waters may be prepared by triturating the corresponding oil with twice its weight of Calcium Phosphate and five hundred times its volume of Distilled Water and filtering the mixture. In tropical and sub-tropical parts of the Empire, these Aquæ Olei may be used in place of the corresponding Aquæ of the Text of the Pharmacopœia."

It is exceedingly doubtful if this territorial restriction will be observed by the practical pharmacists of Great Britain, once they become as fully acquainted as are their American brethren, with the easy and practical method of preparing saturated aqueous solutions of these aromatic oils by the use of an insoluble distributing medium. It will be difficult to convince the practical pharmacist that such waters as peppermint and spearmint must be prepared by distilling the oil and water instead of a simple process of solution or that these waters of the British Pharmacopœia are superior because of such exposure to heat.

The unsatisfactory and tedious process for Extract of Ergot of 1898, is replaced by a process in which the ergot is extracted by water, the aqueous extract concentrated and alcohol added; after standing the liquid is filtered off and evaporated to proper consistence.

Extractum Filicis Liquidum is made with ether and corresponds to our oleoresin of male fern. Description, tests and assay process for filicin are introduced and the product is standardized as containing 20 percent. of filicin.

Extractum Glycyrrhizæ is to be made by macerating liquorice root with chloroform water, expressing and heating the expressed liquid to 100°, then straining and evaporating. The Liquid Extract is made by a similar process, the alcohol being finally added only as a preservative.

Extractum Hydrastis Liquidum is to be prepared with 60 percent. alcohol (instead of 45 percent. in 1898) and to be standardized to contain 2 Gm. of hydrastine in 100 mils of the product.

Extractum Ipecacuanhæ Liquidum is to be prepared by extracting with 90 percent. alcohol without the treatment with lime as directed in the pharmacopœia of 1898 and is to be standardized so that 100 mils shall contain 2 Gm. of alkaloid.

Extractum Nucis Vomicæ Liquidum is to be prepared with 70 percent. alcohol, the fat removed by treatment with melted hard paraffin, and the product standardized to contain 1.5 Gm. strychnine in 100 mils. No attempt is made to recover the alkaloid removed by the paraffin de-fatting.

Four formulas are given for hypodermic injections. While there may be good reason to endorse a standard formula for a hypodermic injection of ergot, there is a better reason that would require that this be directed to be dispensed in steril-

ized and sealed ampoules. In this day of universally used, well prepared and stable hypodermic tablets, it seems unnecessary to include in a modern pharmacopœia formulæ for hypodermic injections of morphine, strychnine, etc.

Liquor Ethyl Nitritis is retained as the title for a preparation containing from 2.5 to 3 percent. of ethyl nitrite in a mixture of 95 volumes of absolute alcohol and 5 volumes of glycerin. There is also official the Spiritus Ætheris Nitrosi containing 1.53 to 2.66 percent. by weight of ethyl nitrite in alcoholic solution. The need for both is not understood.

The volatile oils are well defined and generally the necessary tests for identity and quality are clearly given. The assay processes are the simplest that can be satisfactorily applied. Instead of an elaborate process for determining the amount of cineol, the Oils of Cajeput and Eucalytus are assayed by the phosphoric acid method and for pharmacopœial purposes this is probably all that is necessary. In Oil of Lemon, the citral is determined by the hydroxylamine method.

For several decades, at least, the trend of pharmaceutical authorities has been toward a clearer differentiation of the classes of galenicals, toward defining within proper lines each class of preparations and the grouping of the individual formulæ, wherever possible, under such defined classes. It was to be expected that in this revision, these proper classifications would be respected and followed. Yet we find Oleo-Resin of Male Fern, "an oily extract" entitled "Extractum Filicis Liquidum" and printed along with the extracts despite the statement in the preface that "Most of the Liquid Extracts are of such a strength that one hundred millilitres represent one hundred grammes of the drug employed." An acacia emulsion of Castor Oil is classed with the Mistura and printed with such formulas as Chalk Mixture and Compound Mixture of Iron.

The treatment of the botanical drugs is disappointing. There is lacking that thoroughness of description that one would expect in a modern pharmacopœia prepared by those who have every opportunity to be acquainted with the progress of science and the great advances in pharmacognostic knowledge since the appearance of the previous edition sixteen years ago.

The names of the authors of the binomials adopted are given, but in no case is the family or other botanical classification given. The references to the works where the medicinal plants are figured, a feature of the Pharmacopœia of 1898, is omitted and there is good reason to consider that such information is out of place in a pharmacopœia.

In some cases the definition of the drug assumes the style of a rubric and states the alkaloidal standard, in other cases, with equally important drugs this is omitted, as occurs for example in the definitions of Belladonna Root, Hydrastis and Hyoscyamus.

Any one who has occasion to examine crude drugs knows that they are very rarely free from admixtures. Sometimes these admixtures are other portions of the plant yielding the drug and at other times they are unavoidable or accidental foreign substances. No attempt whatever is made to either recognize the presence of such admixtures or to fix limitations therefor.

The descriptions of the macroscopical characters of the drugs show very little improvement over those of the former edition. It is rather the exception that the

description of the histology or microscopical structural characteristics of the drug or of its powder are given with any degree of thoroughness, and the common adulterants and their characteristics are not even mentioned.

While in some drugs a limit of ash has been added, in many others equally important this has been ignored. As examples, the ash of Lobelia has been fixed in this revision at "not more than 12 percent.," but for Hyoscyamus no limit of ash is given.

The tenacity with which the English people adhere to the tenets and practices of their fathers and forefathers, their aversity to innovations and the making of radical changes, is a recognized trait of the English. This conservatism of the nation, is reflected in their pharmacopœia and while we criticize in a friendly spirit some of its defects and lack of progress, we recognize that it is a safe and practical book of standards for most of the substances prescribed in British medical practice.

MILS VS. CUBIC CENTIMETERS.*

JOSEPH P. REMINGTON.

The new United States Pharmacopœia will authorize the use of the word Mils to replace the word Cubic Centimeters, and at first there will be undoubtedly some criticism and comment upon the change. The last United States Pharmacopœial Convention recommended publicity of changes of this kind in order that users of the United States Pharmacopœia would become familiar with the subject in advance.

The use of the word Mil is not new, but the first use in a Pharmacopœia occurred in 1914, when the British Pharmacopœia adopted it, and it is likely that its use will become universal in time, at least in the English language. Mil is, of course, the first three letters of the French name originally given to the thousandth part of a liter—Milliliter. The use of the word Cubic Centimeter is really an anachronism and the United States government through its bureau of standards (see Bulletin No. 47, page 12) has declared the word Cubic Centimeter as a misnomer.

Very careful experiments by the government physicists have determined the fact that the Cubic Centimeter is larger than the Milliliter by the inconsiderable fraction of 0.000027. In pharmacy, in chemistry, and in applied chemistry, this difference is negligible, but everyone must have regretted the cubic centimeter blot on the harmony and beautiful simplicity of the metric system. The unabbreviated word Cubic Centimeter is too long for everyday use by the chemists and pharmacists of the world.

In America nine out of every ten scientific men mispronounce the word and use "sontee-meter," and it seems that this habit is very difficult to break up. It should properly be called "centi-meter" as the word is anglicized. It is a gross grammatical error to use a word which is half French and half English. If one must use the French, it should be pronounced "sonte-matr."

* Read at the meeting of the Pennsylvania Pharmaceutical Association, June, 1915.

In actual practice it will be noticed that at chemists' congresses and conventions nearly everyone reads Cc. as "See-sees." These are some of the results following the original error of adopting such a word as Cubic Centimeter officially. In the Government Tables, Ml is used, but Ml is difficult to pronounce, hence an abbreviation can just as well take in a vowel—the i—, and so we have the first syllable of three letters of the word Milliliter. Now Mil can be used with a period indicating that it is an abbreviation, but it is much better to adopt the word Mil, as it will be called, and do away with the period. This will also permit the use of the plural Mils. If the period is retained, it would be awkward and improper to use the plural as Mil.s.

It has been stated by a few of the critics and those who always oppose changes that it will be somewhat confusing because we have already a word in the English language "Mill" which is a United States coin, which we never see—the tenth of a cent; but when this word was coined, we had also the word "mill," used for a building for grinding substances, for students who get diplomas from certain schools, and even for pugilistic bouts, and other equally interesting words; but we will have no other Mil in the English language which is spelled with one l and there is no likelihood of mistake or error when the word is used either in speaking or in writing.

Now, practically, we have only to remember never to say Cubic Centimeter or use the abbreviation Cc. again. As previously said, the change is only a change of name. It does not involve any calculations or changes in formulas. Cross out Cc. and write Mil. Never again say sonti-meter, say, Mil; but it cannot be expected that this reform will immediately go into effect and it will take a little time for all of us to become accustomed to the change.

THE RELATION OF CHEMICAL CONTROL TO INDUSTRO-CHEMISTRY.*

EUGENE L. MAINES, PHR. D., SC. D.

Successful industries are, for the greater part, dependent upon the chemical laboratory and chemical control.

The excellent laboratory equipment and staff of such establishments as the General Electric Co., Solvay Process Co., Illinois Steel Co., Pennsylvania Railroad Co., Chicago Packing Houses, Parke, Davis Co., etc., proves the truth of this statement.

The constant growth in efficiency of these manufacturing plants is largely the result of organization, and occupying a most important place in such organization, is the research staff, analytical and general testing laboratories.

True, some plants have no chemist at all, and no testing apparatus. Even in Germany there are many plants chemically uncontrolled, working empirically, by formula.

* Presented at the Eighth Annual Convention of the American Association of Pharmaceutical Chemists held in Rochester, N. Y., May 31st to June 5th, 1915. Delivered as a plea for the formation of a "Scientific Clearing House."

It is not difficult, however, to demonstrate that a chemical laboratory pays and pays well. This point has been learned these many years by all progressive superintendents and managers. The cost of a laboratory (although small) shows conspicuously on the books, while the profits made possible by a laboratory may be lost among other figures unless a special search is made for them. Under these circumstances men of little insight will continue to operate their plants without proper scientific control, until by the competition of better managed plants they are forced to adopt modern methods or go out of business.

The successful establishments, as has already been cited, are fully aware of the necessity of chemical control, this being evidenced by their well regulated scientific departments.

When it is realized that these departments should investigate all new processes, constantly improve the existing ones; correct and explain irregularities of manufacturing operations; invent new processes; that they should determine the valuation and exact composition of all raw materials and finished products, the fixing of yields, the necessary control of different stages of many processes, etc., it becomes clear that if these constructive forces are to be used to the fullest it must be through the creation of an organization that will automatically cause every department in that organization to coöperate with the research and analytical branches.

The duties of a research department may be summarized as follows:

Investigating cheaper raw materials, new products, increased yield, new uses for products manufactured, greater purity of products manufactured, utilization of wastes, more efficient structural material, reduction of cost of production, apparatus, etc.

The department should be equipped with research laboratories where work can be carried on from a test-tube scale to manufacturing in a large enough way to test practical difficulties and costs.

The analytical department should control all work relating to sampling and analysis, and its duties may be given generally as follows:

The analysis and sampling of all raw materials and finished products, as well as the analyses necessary in the intermediate steps of some processes in order to insure proper control. It should furnish figures used to calculate yields, and perform all the analytical work in connection with investigations, which often involves the necessity of inventing new methods or investigating and adopting better methods. It should do all analytical work that will aid the manufacturing, sales, purchasing and construction departments, and coöperate with the sales department in investigating complaints.

These, briefly, are the duties of the modern scientific department.

We will now consider the result of this chemical control.

As you have already seen, the chemist or chemical engineer maintains a place in almost every industry and phase of life. He has reduced the cost of living by discovering cheaper edibles and the production of other products from the waste material of former times, such as oleomargarine from packing house material, oils from cotton seeds, glycerin and soap from waste fats, etc.

In mining he has classified the minerals, enabling by simple tests to ascertain the value of each. He has discovered and invented means of reducing the death rate in coal mining by the use of fire damp indicators, rescue outfits, Davey Safety Lamps, and the regulation of explosives.

He has utilized waste coal by converting it into tar, coke, fuel and illuminating gases, ammoniacal liquor, fertilizers, and many colors used in the dyeing industry.

From the coal gas industry we obtain as by-products, coke, gas, carbon, tar, ammoniacal liquor, and spent purifying material.

In gas manufacture we have as subsidiary products, dyes, sweetening principles, and photographic developers from coal tar, while water-gas yields light oils of the benzole series, creosoting oils, naphthalene oils, road compounds and pitches.

From wood he has made paper pulp, ethyl alcohol, methyl alcohol, rosin, tars, potash and many other products. Waste pine wood, stumps, etc., are now converted into turpentine and other by-products, thus saving the valuable timber for lumber.

In the iron industry the flue dust (about 3% of total ore charged) is collected, heated in the oxidizing atmosphere of a portland cement rotary kiln, and is then recovered in nodular forms, carrying over 60% of iron. This alone represents a saving of 1,250,000 tons of iron ore per year.

Slag, which was formerly a waste product is now converted into slag cement which differs very little in chemical analysis, color, specific gravity, fineness or in usefulness from that made by ordinary methods. The potash industry has been controlled by the German Potash Syndicate for many years, but the possible production of potash on a commercial scale, from the kelp of the Pacific coast may yet cause the Germans some uneasiness.

Nitrogen is recovered from coal by the by-product coke ovens and in Germany it is being abstracted from the atmosphere.

During the past quarter of a century chemists have been developing new uses for new materials very rapidly.

A few years ago chromium had little use and metallic manganese was a curiosity but today these metals are used by the ton as pure metals in alloys for electrical resistance, replacing great quantities of German silver and other expensive alloys. Tantalum and Columbium ores were merely an interest in museums, but today they are being worked for the Tantalum (used as a filament for incandescent electric lights and as a substitute for platinum) and undoubtedly the Niobium will soon be utilized.

In sanitation he has done much to reduce contagion, etc., through the application of the pure food laws and the regulation of public water supply and sewage disposal.

Alcohol, formerly produced from corn, can now be produced from saw-dust, the by-products of sugar works and waste sulphite lyes.

Formerly, kerosene was the chief product sought in petroleum and the lighter and heavier fractions were allowed to go to waste. It is now converted into gas, gasoline, naphtha, kerosene, lubricating oils, asphaltic road material and carbon for electrical purposes. The recent discoveries of Dr. Rittman in the petroleum industry may eventually give the United States a supremacy in the dye-stuffs in-

dustry that has so long belonged to Germany, while the increased yield of gasoline may prove an important factor in paying the costs of the process.

In no phase of chemical industry, however, does chemical control play a more important part than in the manufacture of medicine. The doctor must rely upon the chemist to give him reliable and efficient medicinal products. Thus, both drug and finished product must be assayed, tested and standardized so as to insure the physician with a reliable remedy. When it is considered that many drugs are emergency remedies, the life of a patient often depending upon their activity, it is not difficult to understand why the chemistry of medicine is one of the most important branches. But, chemistry, even at its present best, is incapable of assaying the active principle of every drug, as there exists in certain drugs superactive principles of so delicate a composition that they break down under analysis.

At this point we must determine, not "how much of you is present?" but "how much can you do?" Here must the analyst bow to the pharmacologist and depend upon him to ascertain and determine the physiological activity of such drugs as are not amenable to chemical assay. In this way drugs are compared and adjusted to certain definite and uniform standards, thereby making it possible for the physician to determine in advance the actual effect of a given quantity.

Besides the standardization of products, the chemical laboratory is constantly adding new and valuable remedies to the realm of materia medica and therapeutics.

Today we are in the very midst of the unfolding of the secrets of immunity and prophylaxis. In fact, we are almost impatient if each succeeding number of our scientific journals does not inform us of some new discovery or means of attack against the common enemy—disease.

Probably more has been achieved within the past quarter of a century than in the whole history of medicine. Certain diseases have almost been eliminated and plague and pestilence no longer terrify; for we have the confidence that their causes, even though still unknown in some cases, are material and conquerable, and that their incidences and ravages may be prevented by measures already known or surely to be discovered.

The recent discoveries in chemistry are so all-important and even revolutionary and its position as a science is so comprehensive that one scarcely dare make any statement or prediction concerning it.

The United States, which until recently has lagged behind some other nations in chemical research, is beginning to atone for past indifference. During the past few years the number of students pursuing courses in chemistry at our various colleges has steadily increased. Despite this fact this shows a comparatively small increase in view of the enormous increase in the industrial operations of the country, constantly demanding trained men.

No small part of Germany's industrial progress has been due to the discoveries of her men of science. It may be that Germany has lent more encouragement to scientific research, but there are signs that her supremacy may be challenged as our young men appreciate the advantages to be derived from the pursuit of what has been termed the most practical of sciences.

These results accomplished by the chemical laboratory and chemical control are little short of wonderful. It has been the work of the chemist, physicist, metal-

lurgist, and engineer, all applying the broad principles of chemistry to industry that has made such important and far-reaching development.

Waste has, in some industries, been reduced to a minimum and their efficiency is great indeed, yet in no single case has perfection been reached.

R. J. STRASENBURGH CO., Rochester, N. Y.

DRUGS AND THE MAN.*

DR. ARTHUR E. BOSTWICK, LIBRARIAN, ST. LOUIS PUBLIC LIBRARY.

The graduation of a class of technically trained persons is an event of special moment. When we send forth graduates from our schools and colleges devoted to general education, while the thought of failure may be disquieting or embarrassing, we know that no special danger can result, except to the man who has failed. The college graduate who has neglected his opportunities has thrown away a chance, but he is no menace to his fellows. Affairs take on a different complexion in the technical or professional school. The poorly trained engineer, physician or lawyer, is an injury to the community. Failure to train an engineer may involve the future failure of a structure, with the loss of many lives. Failure to train a doctor means that we turn loose on the public one who will kill oftener than he will cure. Failure to train a lawyer means wills that can be broken, contracts that will not hold, needless litigation.

Congressman Kent, of California, has coined a satisfactory word for this sort of thing—he calls it "mal-employment." Unemployment is a bad thing. We have seen plenty of it here during the past winter. But Kent says, and he is right, that malemployment is a worse thing. All these poor engineers and doctors and lawyers are busily engaged, and every thing on the surface seems to be going on well. But as a matter of fact, the world would be better off if each one of them should stop working and never do another stroke. It would pay the community to support them in idleness.

I have always considered pharmacy to be one of the occupations in which malemployment is particularly objectionable. If you read Homer badly it affects no one but yourself. If you think Vera Cruz is in Italy and that the Amazon River runs into the Arctic Ocean, your neighbor is as well off as before; but if you are under the impression that strychnine is aspirin, you have failed in a way that is more than personal.

I am dwelling on these unpleasant possibilities partly for the reason that the Egyptians displayed a skeleton at their banquets—because warnings are a tonic to the soul—but also because, if we are to credit much that we see in general literature, including especially the daily paper and the popular magazine, *all* druggists are malemployed. And if it would really be better for the community that you should not enter upon the profession for which you have been trained, now, of course, is the time for you to know it.

* A valedictory address delivered at the commencement exercises of the St. Louis College of Pharmacy, May 19, 1915, wherein a layman presents his views anent influences affecting pharmacy.

There seems to be a widespread impression—an assumption—that the day of the drug is over—that the therapeutics of the future are to be concerned alone with hygiene and sanitation, with physical exercise, diet, and mechanical operations. The very word "drug" has come to have an objectionable connection that did not belong to it fifty years ago. Even some of the druggists themselves, it seems to me, are a little ashamed of the drug part of their occupation. Their places of business appear to be news-agencies, refreshment parlors, stationery stores—the drugs are "on the side," or rather in the rear. Sometimes, I am told, the proprietors of these places know nothing at all about pharmacy, but employ a prescription clerk who is a capable pharmacist. Here the druggist has stepped down from his former position as the manager of a business and has become a servant. All of which looks to me as if the pharmacist himself might be beginning to accept the valuation that some people are putting upon his services to the community.

Now these things affect me, not as a physician nor as a pharmacist, for I am neither, but they do touch me as a student of physics and chemistry and as one whose business and pleasure it has been for many years to watch the development of these and other sciences. The fact that I am addressing you this evening may be taken, I suppose, as evidence that you may be interested in this point of view. The action of most substances on the human organism is a function of their chemical constitution. Has that chemical constitution changed? It is one of the most astonishing discoveries of our age that many, perhaps all, substances undergo spontaneous disintegration, giving rise to the phenomena now well known as "radio-activity." No substances ordinarily known and used in pharmacy, however, possess this quality in measurable degree, and we have no reason to suppose that the alkaloids, for instance, or the salts of potash or iron, differ today in any respect from those of a century ago. How about the other factor in the reaction—the human organism and its properties? That our bodily properties have changed in the past admits of no doubt. We have developed up to the point where we are at present. Here, however, evolution seems to have left us, and it is now devoting its attention exclusively to our mental and moral progress. Judging from what is now going on upon the continent of Europe, much remains to be accomplished. But there is no reason to believe that if Cæsar or Hannibal had taken a dose of opium, or ipecac, or aspirin, the effect would have been different from that experienced today by one of you. This is what a physicist or a chemist would expect. If the action of a drug on the organism is chemical, and if neither the drug nor the organism has changed, the action must be the same. If we still desire to bring about the action and if there is no better way to do it, we must use the drug, and there is still need for the druggist. As a matter of fact, the number of drugs at your disposal today is vastly greater than ever before, largely owing to the labor, and the ingenuity, of the analytical chemist. And there are still great classes of compounds of whose existence the chemist is assured, but which he has not even had time to form, much less to investigate. Among these may lurk remedies more valuable than any at our disposal today. It does not look, at any rate, as if the druggist were going to be driven out of business from lack of stock, whether we regard quantity or variety. To what, then, must we attribute the

growth of the feeling that the treatment of disease by the administration of drugs is on the decline? From the standpoint of a layman it seems to be due to two facts, or at least to have been strongly affected by them: (1) The discovery and rapid development of other therapeutic measures, such as those dependent on surgical methods, or on the use of immunizing serums, or on manipulations such as massage, or on diet, or even on mental suggestion; and (2) the very increase in the number and variety of available drugs alluded to above, which has introduced to the public many new and only partially tried substances, the results of whose use has often been unexpectedly injurious, including a considerable number of new habit-forming drugs whose ravages are becoming known to the public.

The development of therapeutic measures that are independent of drugs has been coincident with popular emancipation from the mere superstition of drug-administration. The older lists of approved remedies were loaded with items that had no curative properties at all, except by suggestion. They were purely magical—the thumb-nails of executed criminals, the hair of black cats, the ashes of burned toads and so on. Even at this moment your pharmacopœia contains scores of remedies that are without effect or that do not produce the effects credited to them. I am relying on high therapeutical authortiy for this statement. Now when the sick man is told by his own physician to discard angle-worm poultices, and herbs plucked in the dark of the moon, on which he had formerly relied, is it any wonder that he has ended by being suspicious also of calomel and ipecac, with which they were formerly classed? And when the man who believed that he received benefit from some of these magical remedies is told that the result was due to auto-suggestion, is it remarkable that he should fall an easy prey next day to the Christian Scientist who tells him that the effects of calomel and ipecac are due to nothing else than this same suggestion? The increased use and undoubted value of special diets, serums, aseptic surgery, baths, massage, electrical treatment, radio-therapeutics, and so on, makes it easy for him to discard drugs altogether, and further, it creates, even among those who continue to use drugs, an atmosphere favorable to the belief that they are back numbers, on the road to disuse. Just here comes in the second factor to persuade the layman, from what has come under his own observation, that drugs are injurious, dangerous, even fatal. Newly discovered chemical compounds with valuable properties, have been adopted and used in medicine before the necessary time had elapsed to disclose the fact that they possessed also other properties, more elusive than the first, but as potent for harm as these were for good. Many were narcotics or valuable anesthetics, local or otherwise, which have proved to be the creators of habits more terrible than the age-long enemies of mankind, alcohol and opium. When the man whose wife takes a coal-tar derivative for headache finds that it stills her heart forever, the incident affects his whole opinion of drugs. When the patient for whom one of the new drugs has been prescribed by a practitioner without knowledge of his idiosyncrasies reacts to it fatally, it is slight consolation to his survivors that his case is described in print under the heading, "A Curious Case of Umptiol Poisoning." When a mother sees her son go to the bad by taking cocaine, or heroin, or some other drug of whose existence she was ignorant a dozen years ago, she may be par-

doned for believing that all drugs, or at least all newly discovered drugs, are tools of the devil.

And this feeling is intensified by one of our national faults—the tendency to jump at conclusions, to overdo things, to run from one evil to its opposite, without stopping at the harmless mean. We think we are brighter and quicker than the Englishman or the German. They think we are more superficial. Whatever name you give the quality it causes us to "catch on" sooner, to work a good thing to death more thoroughly and to drop it more quickly for something else, than any other known people, ancient or modern. Somebody devises a new form of skate roller that makes roller-skating a good sport. We find it out before anyone else and in a few months the land is plastered from Maine to California with huge skating halls or sheds. Everybody is skating at once and the roar of the rollers resounds across the oceans. We skate ourselves out in a year or two, and then the roar ceases, the sheds decay and roller-skating is once more a normal amusement. Then someone invents the safety bicycle, and in a trice all America, man, woman and child, is awheel. And we run this good horse to death, and throw his body aside in our haste to discover something new. Shortly afterward someone invents a new dance, or imports it from Spanish America, and there is hardly time to snap one's finger before we are all dancing, grandparents and children, the cook in the kitchen and the street-cleaner on the boulevard.

We display as little moderation in our therapeutics. We can not get over the idea that a remedy of proved value in a particular case may be good for all others. Our proprietary medicines will cure everything from tuberculosis to cancer. If massage has relieved rheumatism, why should it not be good also for typhoid? The Tumtum Springs did my uncle's gout so much good; why don't your cousin try them for her headaches? And even so, drugs must be all good or all bad. Many of us remember the old household remedies, tonics or laxatives or what not, with which the children were all dosed at intervals, whether they were ill or not. That was in the days when all drugs were good: when one "took something" internally for everything that happened to him. Now the pendulum has swung to the other side—that is all. If we can ever settle down to the rational way of regarding these things, we shall discover, what sensible medical men have always known, and what druggists as well as mere laymen can not afford to neglect, that there is no such thing as a panacea, and that all rational therapeutics is based on common sense study of the disease—finding out what is the cause and endeavoring to abate that cause. The cause may be such that surgery is indicated, or serum, or regulation of diet, or change of scene. It may obviously indicate the administration of a drug. I once heard a clever lawyer in a poisoning case, in an endeavor to discredit a physician, whom we shall call Dr. Jones, tell the following anecdote: (Dr. Jones, who had been called in when the victim was about to expire, had recommended the application of ice). Said the lawyer:

"A workman was tamping a charge of blasting-powder with a crowbar, when the charge went off prematurely and the bar was driven through the unfortunate man's body, so that part of it protruded on either side. A local physician was summoned, and after some study he pronounced as follows: 'Now, if I let that bar stay there, you'll die. If I pull it out, you'll die. But I'll give you a pill

that may melt it where it is!' In this emergency," the lawyer went on to say, "Dr. Jones doubtless would have prescribed *ice*."

Now the pill to melt the crowbar may stand for our former excessive and absurd regard for drugs. The application of ice in the same emergency may likewise represent a universal resort to hydrotherapy. Neither of them is logical. There is place for each, but there are emergencies that can not be met with either. Still, to abandon one method of treatment simply because additional methods have proved to be valuable, would be as absurd as to give up talking upon the invention of writing or to prohibit the raising of corn on land that will produce wheat.

No: we shall doubtless continue to use drugs and we shall continue to need the druggist. What can he do to make his business more valued and respected, more useful to the public and more profitable to himself? For there can be no doubt that he will finally succeed in attaining all these desirable results together, or fail in all. Here and there we may find a man who is making a fortune out of public credulity and ignorance, or, on the other hand, one who is giving the public more service than it pays for and ruining himself in the process; but in general and on the average personal and public interest run pretty well hand in hand. Henry Ford makes his millions because he is producing something that the people want. St. Jacob's Oil, once the most widely advertised nostrum on the continent, cost its promoters a fortune because there was nothing in it that one might not find in some other oil or grease.

What then, I repeat, must the pharmacist do to succeed, personally and professionally? I welcome this opportunity to tell you what I think. My advice comes from the outside—often the most valuable source. I have so little to do with pharmacy, either as a profession or as a business that I stand far enough away to get a bird's-eye view. And if you think that my advice, based on this view, is worthless, it will be a consolation to all of us to realize that no force on earth can compel you to take it.

It is doubtless too late to lament or try to resist the course of business that has gone far to turn the pharmacy into a department store. But let me urge you not to let this tendency run wild. There are side-lines that belong properly to pharmacy, such as all those pertaining to hygiene or sanitation; to the toilet, to bodily refreshment. I do not see why one should not expect to find at his pharmacist's, soap, or tooth-brushes, or sponges. I do not see why the thirsty man should not go there for mineral water as well as the dyspeptic for pills. But I fail to see the connection between pharmacy and magazines, or stationery or candy. By selling these the druggist puts himself at once into competition with the department stores. There can be no doubt about who will win out in any such competition as that. But I believe there is still a place in the community for any special line of business if its proprietor sticks to his specialty and makes himself a recognized expert in it. The department store spreads itself too thin—there is no room for intensive development at any point of its vast expanse. Its general success is due to this very fact. I am not now speaking of the rural community where there is room only for one general store selling everything that the community needs. But my statement holds good for the city and the large town.

Let me illustrate by an instance in which we librarians are professionally in-

terested—the book store. Once every town had its book-store. Now they are rare. We have few such stores even in a city of the size of St. Loius. Every department store has its book-section. They are rarely satisfactory. Everybody is lamenting the disappearance of the old book-store, with its old scholarly proprietor who knew books and the book-market; who loved books and the book-business. Quarts of ink have been wasted in trying to account for his disappearance. The Public Library, for one thing, has been blamed for it. I have no time now to disprove this, though it is very clear to me that libraries help the book trade instead of hindering it. I shall simply give you my version of the trouble. The book-dealer disappeared, as soon as he entered into competition with the department store. He put in side lines of toys, and art supplies, and cameras and candy. He began to spread himself thin and had no time for expert concentration on his one specialty. Thus he lost his one advantage over the department store—his strength in the region where it was weak; and of course he succumbed. If you will think for a moment of the special businesses that have survived the competition of the department store, you will see that they are precisely the ones that have resisted this temptation to spread themselves and have been content to remain experts. Look at the men's furnishing stores. Would they have survived if they had begun to sell cigars and lawn-mowers? Look at the retail shoe stores, the opticians, the cigar stores, the bakers, the meat markets, the confectioners, the restaurants of all grades! They have all to compete with the department stores, but their customers realize that they have something to offer that can be offered by no department store—expert service in one line, due to some one's life-long training, experience and devotion to the public.

I do not want the pharmacist to go the way of the book dealers. Already some of the department stores include drug departments. I do not see how these can be as good as independent pharmacies. But I do not see the essential difference between a drug department in a store that sells also cigars and stationery and confectionery, and a so-called independent pharmacy that also distributes these very things.

I am assuming that the druggist is an expert. That is the object of our colleges of pharmacy, as I understand the matter. As a librarian I want to deal with a book man who knows more of the book business than I do. I want to ask his advice and be able to rely on it. When I have printing to be done, I like to give it to a man who knows more about the printed page than I do. When I buy bread, or shoes, or a house, or a farm I like to deal with recognized experts in these articles. How much more when I am purchasing substances where expert knowledge will turn the balance between life and death. I have gossiped with pharmacists enough to know that all physicians do not avoid incompatibles in their prescriptions, and that occasionally a combination falls into the prescription clerk's hands, which, if made up as he reads it would produce a poisonous compound, or perhaps even an explosive mixture. Two heads are better than one, and if my physician ever makes a mistake of this kind I look to my pharmacist to see that it shall not reach the practical stage.

I recognize the great value and service of the department store, but I do not go there for my law or medicine; neither do I care to resort thither for my

pharmacy. I want our separate drug stores to persist, and I want them to remain in charge of experts.

And when the store deals in other things than purely therapeutic preparations—which I have already said I think probably unavoidable, I want it to present the aspect of a pharmacy that deals also in toilet preparations and mineral water, not of an establishment for dispensing soda-water and soap, where one may have a prescription filled on the side, in an emergency. And when the emergency does arise, I should have the pharmacy respond to it. It is the place where we naturally look in an emergency—the spot to which the victim of an accident is carried directly—the one where the lady bends her steps when she feels that she is going to faint. In hundreds of cases the drug store is our only standby, and it should be the druggists business to see that it never fails us. There are pharmacies where a telephone message brings an unfailing response; there are others to which one would as soon think of sending an inquiry regarding a Biblical quotation. To which type, do you think, the public will prefer to resort?

Then there are those little courtesies that no retail business is obliged to offer, but that the public has been accustomed to expect from the druggist—the cashing of checks, the changing of bills, the furnishing of postage stamps, the consultation of the city directory. There can be no reason for resorting to a drug store for all these favors except that the pharmacist has an enviable reputation as the man who is most likely to grant them. And yet I begin to hear druggists complaining of the results of this reputation, of which they ought to be proud; I see them pointing out that there is no profit on postage stamps and no commission for changing a bill. They intimate, further, that although it may be proper for them to put themselves out for regular customers, it is absurd for strangers to ask for these coutesies. I marvel when I hear these sentiments. If this popular impression regarding the courtesy of the druggist did not exist, it would be worth the expenditure of vast sums and the labor of a lifetime to create it. To deliberately undo it would be as foolish as to lock the door in the face of customers.

I do not believe that in St. Louis the pharmaceutical profession is generally averse to a reputation for generous public service, and I base my belief on some degree of personal knowledge. The St. Louis Public Library operates about sixty delivery stations in various parts of the city. These stations are all in drug stores. The work connected with them, though light, is by no means inconsiderable, and yet not one of the druggists who undertake it charges the library a cent for his space or his services. Doubtless they expect a return from the increased attractiveness of their places to the public. I hope that they get it and I believe that they do. At any rate we have evidence here of the pharmacist's belief that the bread of public service, cast upon the waters, will sooner or later return.

You will notice that I am saying nothing about advertising. One would think from the pharmaceutical papers, with which I am not unfamiliar, that the druggist's chief end was to have a sensational show window of some kind. These things are not unimportant, but I do not dwell on them because I believe that if a druggist realizes the importance of his profession; if he makes himself

a recognized expert in it; if he sticks to it and magnifies it; if he makes his place indispensable to the community around him, the first point to which the citizens resort for help in an emergency, an unfailing center of courtesy and favor—he may fill his window with toilet soap, or monkeys, or with nothing at all—there will still be a trodden path up to his door.

Gentlemen, you have chosen as your life work a profession that I believe to be indispensable to human welfare—one of enviable tradition and honor and with standing and reputation in the community that set it apart, in some degree from all others. And while I would not have you neglect the material success that it may bring you, I would urge you to expect this as a result rather than strive for it as an immediate end. I would have you labor to maintain and develop the special knowledge that you have gained in this institution, to hold up the standard of courtesy and helpfulness under which you can best do public service, confident that if you do these things, business standing and financial success will also be added unto you.

THE SCIENCE OF PHENOMENA.*

J. ROEMER.

An interesting presentation relating to the "Science of Phenomena, as applied to drugs, basing the action of such on the energy within the atoms and molecules, which through electro-motive forces of the body in reaction is transformed into kinetic energy, resulting in the Phenomena of Drug Action."

In presenting the subject, "The Science of Phenomena," it may appear that the title is inadmissible, according to the usual interpretations accredited to science and that there is an error in its meaning, but an analysis will prove that such is not so and moreover that previous scientific interpretations are inadequate in explanation.

That explanation of phenomena has always been the objective of science is manifest from investigation of methods employed in endeavors of explanation in the realms of its varied applications in search for truth, but that it in itself can become and is the ultimate science, has until recently not received the recognition that it merits.

Phenomena of science are the accumulated array of facts which through investigation and research are continuously amassing without consistent or reasonable co-relations to one another and therefore unless it finds the means to relate and co-relate these phenomena as concepts to the mind progress is slow, therefore in designating the subject, "*The Science of Phenomena*," we not only postulate a title but open up a channel to the better understanding of their relations.

* Read before New York Branch, A. Ph. A.

The subject becomes one of direct concern to all manifestations as presented in the universe, but whether from cause to effect or from effect to cause cannot be fully known without a clear conception as to *why* of all.

That this great and momentous question is ever and ever farther removed from the immediate knowledge of man is axiomatic, for the greater increase of that knowledge ever becomes the incentive to ever greater research.

In order to thoroughly encompass facts deducible as knowledge, we must formulate a starting point and follow a procedure of correct interpretation, then safely conclude that from out of all confusion we will yet see the light in answer to that greatest of all questions concerning science, the *why* of things.

The subject as *"The Science of Phenomena"* finds application to all that is, but the object in this presentation is to restrict and confine its application to that division of science which relates to medicine and to the accepted designation, pharmacology.

To answer the question *why* is the object of all investigation and research and until today there is no definite answer to much that concerns medicine.

As postulate to a starting point we must begin with mind and likewise following phenomena through their varied phases must also end with mind.

The mind operates through a controlling force; that which it apprehends is a concept, apprehension itself is a result of perception and perception a result of conscious sensory impression, and knowledge becomes the direct manifestation of this phase system.

Without a something to apprehend there would be no need of mind, much less a use, and to supply that something in its widest, broadest and most comprehensive latitude we will accept it as the universe and all the manifestations as concepts conveyed or imparted by whatever forces may operate we will name phenomena.

These then become the fundamentals which to the mind we must relate and co-relate and by successive steps through interpretations prove the greatest of all questions.

We can know phenomena *as manifestations only by physical aspects which result from inherent physical properties.*

Physical properties, however determined, are cause per se of phenomena and in light of known knowledge are nothing more and nothing less than *natural properties*, it is therefore axiomatic that by and through natural properties alone can we obtain knowledge.

As human beings and the more so as scientists we are concerned with correct interpretations, we cannot create, we cannot alter, we cannot destroy, we are ourselves wholly controlled by what we know to be fundamental natural laws; these laws, through invariability and immutability in operation give rise to phenomena through forces, and these forces are the influences which determine all.

In entering the world governed and controlled by forces, science must concern itself with the operations of these forces, for it is through correct interpretation of such alone that we are able to prove cause to effect and conversely effect to cause.

Evolution in understanding has been slow to progress for the materialistic

conception of the ultimate of matter has long held the stage and as a barrier has denied even the presumption to other reasoning.

With the advent of the dissociation theory and its comprehensive underlying fundamental as explained by electronic phenomena and a clear insight into the physics of radium, we are entering a field in which we are beginning to appreciate that we are no longer concerned with matter as substance, but that far beyond this lies the reality which as manifestation to us is a phenomenon of *energy*.

In the element radium we find the master key that will unlock the storehouse to greater and wider knowledge and much that has been misunderstood or not understood at all will find herein the beacon light to the greater sphere of our universe.

At the January meeting of this Branch details of the history of discovery and of the peculiar properties of radium were thoroughly presented, yet in order not to lose sight of the wonders that this element reveals to us it may not be amiss to tabulate the known physical properties.

As men of science looking for truth and as scientists concerned with elucidation and solution of problems that appear complex, we must have the courage to recognize and to accept the truth when we find it, and regardless of any prejudice, regardless of any bias or of any ideas or opinions, we must follow the trail, no matter how, for it will take us from the beaten paths of the present misconceptions.

And so radium has given us a truth, we are familiar with the electronic conception and we can thereby explain its apparently peculiar properties; these in general are as follows:

Ray radiations, consisting of alpha, beta and gamma.

Ray emanations, which in loss are regenerated within the atom; these emanations are subject to reaction, to decompositions, and these decomposition products give rise to other elements or pseudo elements.

Through observation and experiment and by calculation we know that this is a phenomenon that continues for thousands of years and have ascertained that these radiations and emanations are *energy charges*.

To sum up the known properties of the energy radiations as observed in beta rays, we know they are:

Negatively charged electrical particles.

Their velocity is about one hundred thousand miles a second.

Their mass is equal to one-eighteen hundredth of the mass of hydrogen.

They represent mass and inertia.

They discharge electrified bodies.

They are deflected in opposite direction from the positive charge by the magnet.

They give rise to light and heat in bodies which they strike.

They communicate mechanical motion to bodies.

They are absorbed by bodies in direct proportion to the density of those bodies.

In other words the atom of radium is an atom of *energy*, a potential energy that is inherent or intrinsic, and this energy is available as kinetic energy and through transformation is dissipated into heat and light.

Leaving out of consideration for the time being the physical manifestations of the other rays we can thus graphically illustrate the beta rays as follows:

Radium	*Beta Rays as Energy*	*Potential*	*Kinetic*	*Heat* / *Light*

This being true of the element radium with evidence to support that truth, it becomes a truth transcendent that it is *true for every element.*

Natural law is universal and invariable, gravitation acts upon all things in like manner, there is no exception, and as controlling force is immutable, and likewise the forces which govern and control the element radium are the forces which govern and control every other element.

To this in our daily applications in the field of what we as yet choose to designate chemistry we have ample opportunity of demonstrating the truth of this proposition, we can consider any reaction occurring and in the light of the electronic conception we can no longer maintain that elements per se as substance react with one another, but must correctly interpret these phenomena as the interchange of energies of the elements, or in other words the action and reaction of their electrical charges.

Without the necessary influences which free these energies we can have no phenomena of reactions and it therefore follows that through correct interpretation the whole structure upon which chemistry is reared becomes one of exchange of physical forces and must be viewed as the "science of pure physics."

Chemistry must give way, for in the light of a better and more comprehensive understanding there is *no* chemistry. This as a science has been built up from the past imagination of the atom as ultimate of matter without a clear conception that beyond this phase lies the true solution of the reality in the electron, which electron we now conceive as electrical charge.

Each and every statement will no doubt find its need for defense, and to those who have followed the past ideas in relation to elements it will become most difficult to overthrow old conceptions and accept the new. It is not my purpose to argue with needed proofs in relation to what has been given. This is but preliminary to that which I have chosen as the subject for tonight and even that is but a detail to the greater application of the theory of energy.

The subject *"Phenomena of Drug Action"* therefore becomes a detail of the greater subject *"The Science of Phenomena,"* and as this is related to pharmacology, I'll endeavor to confine myself to that part.

In order more fully to appreciate the shortcomings of each and every previously advanced theory of drug action it may not be amiss to give a little consideration to the ideas prevalent today in that respect.

There are numerous theories held as well as defended as to how drugs act. Let me make the bold statement that each and every one is based upon misconception and therefore misunderstanding and consequently all are erroneous; we have no one theory that explains the action of all drugs, and as to the question *why* drugs act there now is no light upon this subject.

In the presentation tonight of the subject, *"The Phenomena of Drug Action,"*

as embodied in the "*Theory of Energy*," with full and comprehensive conception of the fundamentals, there will be given, I believe for the first time an adequate idea of the reason for such action, not alone answering the question how, but also encompassing the reason *why*, and in following the elaboration or unfolding of this theory it will at the same time give a clear understanding in relation to these actions by showing they could not act otherwise.

That there is dissatisfaction with present ideas and theories of drug action is apparent; when giving instruction or in trying to predicate the action, failure results in obtaining such information, and however much we may desire to hold to ideas that drugs act, we cannot overlook the fact that there is something lacking to support our ideas; there is something lacking; drugs do not act, they never did act, they never can act.

That the many theories advanced, supported and even defended may argue for correctness for any given class of drugs is the very proof which defeats such theory in not being able to encompass all drugs, and it is admitted that there is no positive law or rule upon which to date we can account for the varied phenomena as manifested by the administration of drugs.

If a theory cannot account for every fact relating to that theory, it then, by reason of that failure becomes untenable for any fact.

To analyze the shortcomings of every previously advanced theory would take too much time. Sufficient to note and emphasize is the point that if we had an adequate theory that alone would be sufficient and we would not have the many that are extant today.

Yet, without bearing in mind the salient points of the more prevalent ideas, it may be difficult to comprehend their applications and shortcomings: one theory assumes action upon physical properties of solubility, rate of diffusion and absorption. These may influence phenomena of action, yet the theory falls in failing to co-relate allied drugs, as example, acetanilide and antipyrine, and further does not give information of how action is brought about.

Another theory assumes properties based upon chemical constitution, another upon molecular arrangement, another combines the two, then we have the biochemical theory and a few more of less import. They each relate a few drugs to answer their particular application and were the time longer it can readily be proven that each and every one in light of facts is untenable, and the conclusion is inevitable that science has not given us a clear understanding of what is meant by drug action.

In the scope of inclusion for the theory to be advanced there are no exceptions and all drugs, whether of animal, vegetable or mineral origin, find the true reason for phenomena produced. *They do not act.*

There is so much confusion and so much that is fundamentally erroneous in conception, in term, in phraseology, in explanation and in definition in medicine, pharmacology, biology, bacteriology, chemistry and physiology, and in short in every subject related to medicine that any attempt to reconcile the conflicting ideas is impossible, so in order more fully to comprehend the application of *the theory of energy*, in relation to phenomena, we must divest our minds of all the misunderstanding and clear it from the cobwebs of present conception so that

we can grasp the import of the reality and apply the correct interpretations to the facts.

To give you a little idea of the shortcomings of the branch of science as medicine, let me cite a few fundamentals whose answers medicine has not yet supplied and in which that science is wofully cast adrift.

The purpose in submitting these questions in this relation is not for criticism but for the reason of obtaining a better understanding for which the *theory of energy* will supply the answers and supply them correctly.

Why is the blood a circulating fluid?

Why does it contain two kinds of cells?

Why would not either the white or red alone do?

Why are these cells circulating and not anchored?

Why are they circulating in a media called plasma?

When pus is the result of any suppuration, why is it that the white cells alone constitute that pus?

What is the cause and the reason of an elevation of temperature due to infection or suppuration?

Why is the stomach secretion acid?

Why is it hydrochloric acid? Why not nitric or phosphoric, or citric or mayhap a specific acid of individual human characteristic?

Why is sodium chloride a constituent of the secretion of the stomach?

Why is not the stomach alkaline and the intestine acid?

Why is the normal temperature within the range of 98.4 *and* 98.6 *degrees F. and not* 90 *or* 100 *degrees F.?*

If tubercle bacilli are the cause of tuberculosis, why is not every one susceptible? Why is one being immune and another not? This has never been answered, even with the theory of immunity.

Why has not the cause of nephritis long since been answered, surely there is data enough?

Why has not science given the why of serum reactions?

Why has not science as yet found the origin of cancer?

Why is the air we breathe three-fourths nitrogen and only one-fourth oxygen? To say that the nitrogen acts as dilutent to the energetic oxygen is not the reason; it is only a guess and a very crude one at that.

Nitrogen performs a most important function, it has its purpose and there is a most substantial reason for its wide prevalence.

So in light of this we must acknowledge that science hasn't given us a great amount of knowledge that is fundamental. It has been said that if we could answer these questions we could explain life itself. However this may be, I will say that we can answer them, we can answer them correctly and the facts to verify are so strikingly and palpably evident that it is nigh unbelievable that we have missed them for so long.

This subject is so vast that you will appreciate the utter inability of entering into the details of even a few of the salient points given and the presentation of the detail "*Phenomena of Drug Action*" as a part of the "*Science of Phenomena*" becomes a large subject in itself and even in this I must confine myself to a very limited field for want of time.

We first must disabuse our minds that drugs act. This is fundamentally an error and to further maintain that idea is to maintain a contradiction.

It is when we subject substances to given influences that we observe phenomena of action.

If drugs acted we could anticipate the same result within a corpse as we could within the living body. If again the substance of a drug produced an action we must not forget that we would lose that substance, but we know better than that, for we can recover the substance in its entirety, weight for weight, even though it suffers many transformations in its passage through the body.

I am familiar with all the objections that science and medicine as science will advance to account for the difference, but it still remains an unanswered fact that if drugs did act we should obtain like results both in the live body and the corpse; yet strychnine has no more effect upon or within the corpse than has milk sugar or sodium bicarbonate, and when we analyze this fact instead of evading the question we will find the reason *why*, and this will be an answer to a very important fact.

Take a normal healthy living being and if conditions could be such that we could administer a dose of strychnine one minute before death we would observe certain specific phenomena. Now as the result of accident this normal being is killed and one minute after death this body has not had the time to alter any of its organs, nor of its tissues, the blood is still normal and in every respect this body so far as we are able to determine is exactly like the living body, yet if we administer a hundred times the quantity that we did one minute before death, there is no phenomena observed or produced. We can go still further, we can cause absorption by the body fluids, we can by force diffuse it through the blood stream, but no matter what we do there is no response.

This then becomes a most important link and we must account for something in the living body that the dead body does not possess. There is a difference and in this difference we find the reason, everything material is the same, exactly the same, and the difference is that the corpse has lost its power to transmit *energy*. What kind of energy? It is not its potential energy for that in the short space of time has not been dissipated and is still locked up within the cells, but failing in its power of transforming and transmitting this potential we can only conclude that the loss is *Kinetic*. The flow having been interrupted or prevented and unless the power exists to re-establish that flow the potential alone is useless to maintain life.

This kinetic energy is an electromotive force, it acts and responds to reaction, to government and control through influences and agencies of like electromotive forces and action and reaction resultant are mathematically proportionate to the degree of influence.

No action of any substance per se can influence it, and unless a substance possess an electromotive force inherent or acquired that substance is wholly inert or passive to influence a manifestation as phenomena of action.

I won't go into the explanation of the system nor of the manner in which this electromotive force is conducted or distributed throughout the body, but I will ask you to accept it as fact that this force is stored within the brain cells

and from there through radiation carried to every cell of the body and that as a direct current of energy flow.

Accepting this, how can we now apply this idea in relation to what we understand, although erroneously, "drug action"?

Strychnine is	$C_{21}H_{22}N_2O_2$
Morphine	$C_{17}H_{19}NO_3$
Cocaine	$C_{17}H_{21}NO_4$
Hydrocyanic acid	C H N
Nitroglycerine	$C_3H_5N_3O_9$

Disregard all ideas of all theories advanced to account for "drug action" and follow the one idea of the energy stored or locked within the molecules of these particular drugs, energy which is potential but which through the influence of the operation of the electromotive force of the body is released and through reaction is transformed into kinetic.

Strychnine then possesses an energy which is capable of producing an alteration of the body current which results in the phenomenon of interruption, increasing in intensity as the amount given increases until a quantity is given whose released energy is greater than the power of the body's energy to overcome, producing the successive phenomena of first activation, or excitation, then spasmodic contraction, then shock and finally death.

Do these actions as phenomena differ in any way from the alternating electric current, first as to power of such current inducing interruption of the body current as manifestation of activation, then through increase spasmodic contraction, then shock and finally if power is still more increased, death?

Does it differ in its phenomena from the phenomena of tetanus?

Does it differ in its phenomena from that produced by radium?

It does not, and in all cases cited, apparently widely divergent, instead of assuming we are dealing with four different conditions we are dealing with one and the same fundamental cause and that is action as manifestation of phenomena and the phenomena are but the results of one and the same energy; potential energy which through influence is converted to kinetic and the kinetic in its powers increased until it overcomes the kinetic energy of the body.

If this is true it may be argued, why not at once determine the potential and through influence of transformation, the kinetic power of energy that any one substance is capable of producing and employ only that one as agent for every condition of abnormality and disease? The question elaborates a far greater reach than at first is apparent; first, complexity of the body in toto containing numerous elements; second, the fact of different influences, and third, the fact that in the atom radium we find different kinds and degrees of energy and each subject to influences of different degrees, yet considered in its broadest aspect, it is not too far a reach to anticipate that when we obtain more knowledge of the subject, that the power locked up in the atoms and the molecules of a substance may accomplish far greater results than even our imagination at present would permit us to deny.

We are entering into a new realm. From ideas of all other theories we can

never hope to fathom the power of energies locked up waiting for science to open. We do know that the atom of radium is controlled by forces; we know that its intrinsic energy in quantity is enormous; we know that this manifests itself in different degrees; we know that it is subject to control by other forces, and as fundamental, the forces that control the atom are the same forces that control the molecule and the forces that control the molecule are the same forces that control the mass, so we must look to the atom for the solution of the many perplexing problems that science today as yet does not appreciate and following the course of the influences which control the atom, we are sure to fathom the reason of the *why*?

To revert to the tabulated list of drugs, we will take morphine. From its chemical constitution we should certainly not be unreasonable to expect this drug to act similarly to strychnine. It contains, like strychnine, C H N O. That the difference in quantities does not give us reason for such wide difference in action must be admitted and that molecular arrangement is wholly an assumption in this instance is also known, but considered in the light of the theory of contained energy we can readily account for its phenomenon as resulting in its power of diminishing the energy of the body and in this manner by suspension causing inaction and if given in too large a quantity causing entire suspension or death.

Cocaine likewise as manifestation possesses its particular degree and kind of energy; our old ideas that it paralyzes nerve endings when locally applied is merely an invention of a phrase to explain what is not understood. Cocaine never paralyzed a nerve. When a nerve is exposed, severed, injured or in any way lacerated, there is a manifestation of pain. When then cocaine is applied the pain ceases, not through any paralysis, but through the result of an energy action which restores equilibrium to that nerve circuit supply.

Administer a lethal dose of hydrocyanic acid and we know that death will follow immediately. Herein we have the most striking illustration of an action so-called which upsets every theory under the old idea of drug action, whether of solubility, rate of absorption, diffusibility, chemical constitution, molecular arrangement or any other advanced idea, the result in death is too swift for any theory to account for the rapidity of its influence, but viewed in the light of what actually takes place that of a transformation of its potential to kinetic energy through influence of reaction to the electromotive force of the body we can account for the power of this nitro compound in like manner as we can account for the released energy of nitroglycerine, and for this we cannot maintain that it is the substance which acts for we know that it is a power of the released energy which possesses a force sufficient to shatter rocks.

It is a matter of no little concern as well to understand why it is that these substances are so energetic. I do not want to digress too much, as this particular phase is another detail of infinite magnitude as another link in the chain of "*The Theory of Energy*" and would take hours to present, but sufficient for the time is the fact that all these substances named contain a common elementary constituent and that is *nitrogen*.

Nitrogen is harmless you will say. We breathe quantities of it every minute. You might also say that albumen contains nitrogen and this is surely innocuous,

in fact so much so that it is the very substance that is the food for embryonic life, and to all this I agree. Nitrogen is the food, per se harmless, also apparently innocuous, but permit me to add that because science has as yet not placed its true function, it is not strange that you should entertain such ideas. The reason that such large quantities exist in the air we breathe, the reason that it is a constituent of albumen and to the other extreme that it is contained in every alkaloid and also the common constituent of each and every seed throughout all plant life are the very reasons that this elementary substance becomes at once the most important substance known in the whole realm of the universe in its specific relation to life.

Nitrogen, not oxygen, is the essential to life. Oxygen is needed, and to a great extent we know the functions it performs, but without nitrogen there would be no life of any kind for it is the fundamental element whose function is to transform the energies which govern and control life. Of this I hope at some future time to tell you something more.

What I want to dwell upon now is the electromotive phase which influences energy action as applied in the idea of "The Phenomena of Drug Action."

Being concerned with drugs as remedial substances or agents we must not overlook the important fact that fundamentally the body is governed and controlled through energies. This through equalized distribution is the reason for health, and when through influences any or all parts do not receive an equal amount needed or required to maintain equilibrium, abnormality and disease are then a consequence.

The human system contains from 65 percent to 70 percent water. This we know is nature's greatest reagent, without which no reaction between the forces of elements would take place; this is the medium which carrying salts in solution effects distribution to each and every cell of the body. Sodium chloride is the predominant salt and from facts proven through physics, we know that sodium chloride is the most perfect electrolyte as neutral salt known in nature; biology and geology both, tell us that life found its origin in the ocean and we know that the water of the ocean contains three and a half times more sodium chloride than all of its other mineral constituents combined, originating under these conditions. We are the product or result of these conditions and considered from these two factors alone, our system then becomes or rather is the ideal system for action and reaction governed by electromotive forces. Added to this the intricate net work of nerves whose function is to convey, conduct and radiate currents, we can readily understand how the body generates, supplies and distributes its electric currents.

In introducing a greater amount of sodium chloride than is needed to maintain an equilibrium, we intensify and excite the influence of the electromotive force of those parts with which it comes in contact. If administered into the stomach it activates that organ to greater activity and passing to the intestines likewise intensifies action and catharsis is the result. Given in solution into the blood stream it intensifies energy flow and the phenomena of its action is wholly through its inherent power as an electrolyte and not because of the substance as sodium or chlorine.

So we must measure the degree of activity of all salines according to their

electrolytic power and in degree as such force is inherent in them as mathematically available energy, we will be able to determine their place in specific order whether they will prove cathartic, purgative, laxative or normalizer.

As substances then we do not, cannot lose them. Transformations to different molecular compounds through reaction may take place, which again, is but the exchange of their physical energies, and it is the energies of the substances that in reality produce, as results, what we incorrectly understand as drug action.

Following out the idea of energy phenomena, facts innumerable support the idea and through such we will be able to relate the various properties of drugs. Taking the following, we can readily understand the phenomena of their behavior, in which an

> Astringent is any substance or force of weak electrolytic power.
> Calefacient, one of increased electrolytic power.
> Rubefacient, one still greater.
> Vesicant, still more, and
> Escharotic of such power as to wholly overcome the power of the system's force or current.

In comparison with the force of heat or electricity with substance or matter we can establish a true relation and that we are no longer dealing with different agents, but that we are dealing with the energies which in degree produce the like results that we reasonably anticipate they should.

Thus we can invade the field of the *"phenomena of drug action,"* and apply our ideas in elaboration in differentiating between stabilizers or normalizers, antiseptics and disinfectants and obtain the clear cut conception in results obtained.

A stabilizer or normalizer, whether as substance or as the force as heat or electricity or as radium itself, is one in which the equilibrium of energy forces are maintained; in other words, in which the reaction of their energies is maintained in a state of equal exchange: an antiseptic, in which the energy of the agent is greater than the energy of the surrounding influence and a disinfectant one, in which the energy is so great in power that it wholly overcomes the energy of invading organisms. We view this phenomenon when substances are employed, erroneously as the activity of substance, when in reality it is energy whose action is identical with heat, light or electricity.

That the energy of the body is the basic and fundamental starting point becomes evident. That the storehouse is the cells of the brain has been amply demonstrated. That government of control is through radiation in distribution by nerves, and through these every cell of the body is governed and controlled, that the food we eat, the water we drink and the air we breathe are the sources of supply. Nitrogen is the one element whose function is to transform the obtained energy into available energy as potential and the function of its regulation and distribution is effected by the nervous system. When interference occurs to the supply to any particular part, it is then that equilibrium is disturbed and abnormality and disease are the consequences and result. Following this it will become of primary importance to determine the normal amount in supply needed for the entire system and also for each particular part and by means of such

determinations the coming physician will be not alone able to obtain a clear and correct insight into cause and effect, but will be able to predicate the consequence and result of such interferences for he will then know what is the meaning of vital force. In order to accomplish all this he will through necessity be first, a trained physicist, then a mathematician and lastly an anatomist.

The use for drugs will be planted upon a firm basis if need be found for their use and what we determine as the possibility in action of drugs today we will be able to know as specific tomorrow.

Drugs per se do not act, it is their inherent energies contained within the atom and these energies through influences of release, react with the energies of the body, and whether substances as agents or force as heat, light or electricity be employed, the results that are manifest are nothing more and nothing less than phenomena of physical transformations of energies.

In conclusion of this, a preliminary of the subject, appreciation is extended for the aid given by H. T. Kelly, M. D., and St. C. R. Gay.

TO PREVENT TYPHOID.

Edwin O. Jordan, professor of hygiene and bacteriology at the University of Chicago, writing in the Journal of the American Medical Association, gives the following rules for the prevention of typhoid fever:

For the individual:

1. Keep away from all known or suspected cases of typhoid.
2. Wash hands thoroughly before meals. Do not use "roller towels."
3. Use drinking water only from sources known to be pure, or if this is not possible, use water that has been purified by municipal filtration or by hypochlorite treatment or by boiling in the household.
4. Avoid bathing in polluted water.
5. Use pasteurized or boiled, instead of raw, milk.
6. Select and clean with the greatest care vegetables and berries that are to be eaten raw.
7. Avoid eating "fat" raw oysters and, in general, oysters and other shellfish whose origin is not known.
8. Be vaccinated against typhoid in all cases in which any special exposure is known or feared.

For the community:

1. Insist on the hearty co-operation of all persons with an efficient health officer.
2. Require notification and a reasonable degree of isolation of every known or suspected typhoid case.
3. Exercise strict control over the disinfection of known typhoid excreta.
4. Insist on pure or purified water supplies.
5. Require pasteurization of milk supplies.
6. Regard all human excreta as possibly dangerous and control their disposition in such a way as to prevent contamination of food or drink.

BURETTE—IMPROVED FORM.

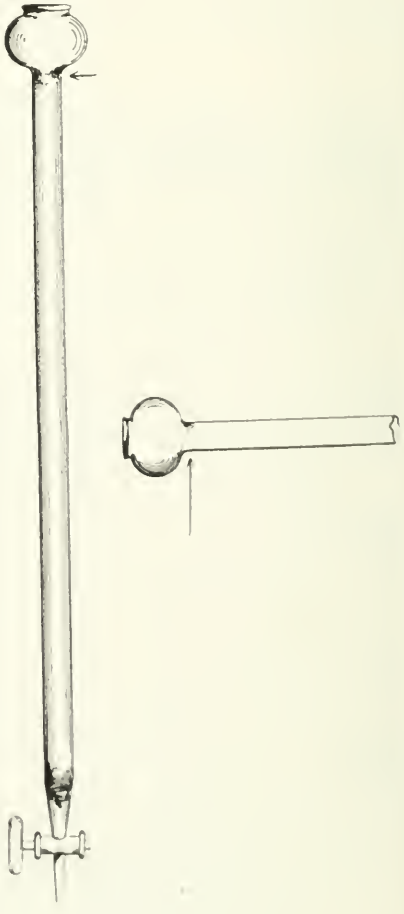
JOHN W. FORBING, PH. C., B. S. IN CH.



The accompanying drawing gives the improved form of burette in the vertical position and a section of top in the horizontal.

In volumetric work it frequently happens, even when a large number of burettes is at the disposal of the operator, that solutions must be discharged and new solutions of different character introduced. Ordinarily, to accomplish this, the instrument is emptied of the solution previously contained, washed with distilled water, and, to avoid dilution, a small portion of the volumetric solution to be used is poured in, and the water adhering to the sides washed out several times.

There are, chiefly, two ways in which this is done; the first by closing the top with the thumb and agitating a small portion of the V. S. to be used, emptying and repeating the operation several times; the second without closing the top, bringing the burette to a horizontal position, rotating and balancing the liquid in a manner that it does not escape. The former method is not scientific, nor is it a strictly cleanly way of handling solutions. The latter is clumsy, and, even with the most adept, unsatisfactory.



In placing a bulb similar to that of a thistle-tube on top of the burette, the latter method is easily handled by those even who seldom have occasion to use burettes. When the improved burette, as shown in drawing, is placed in the vertical position, it can be rotated with assurance that the bulb will catch the over-flow, prevent spilling and the running down of the liquid on the outside of the burette. By making the aperture of the bulb somewhat larger than that of the lumen of the burette proper, filling is made easy also, and the necessity for use of a funnel is obviated.

CREIGHTON UNIVERSITY LABORATORIES, Omaha.

A NEW METHOD FOR THE QUANTITATIVE SEPARATION OF STRYCHNINE AND QUININE.

G. N. WATSON, UNIVERSITY OF KANSAS.

The chloroplatinate of strychnine is nearly insoluble in water, insoluble in alcohol and practically insoluble in a mixture of alcohol, 90% and dilute hydrochloric acid, 10%. The chloroplatinate of quinine is soluble in water, soluble in alcohol and very readily soluble in the alcohol-hydrochloric acid mixture.

From the above data, the following method has been worked out for the separation of strychnine and quinine that seems to excel in point of accuracy and simplicity any method heretofore published,—the method being especially valuable for the separation of small quantities of strychnine from large quantities of quinine, a condition generally found when these two drugs are prescribed together.

Dissolve .050 to .100 grammes of the mixed alkaloids (depending on amount of strychnine present) in a small amount of the alcohol-hydrochloric acid mixture (about 5 cc.), add 20% solution of platinic chloride, drop by drop, while slightly agitating the mixture, until the precipitation is complete. Add 5 cc. more of the solvent, cover with watch glass and set aside for one hour, then filter through tared filter, wash with alcohol, place in oven, dry at 100° C. for fifteen minutes, cool and weigh. If the proportion of quinine is large, it will be necessary to add 5-15 cc. more of the solvent before filtering. It will also be necessary to decompose the precipitate with alkali, NaOH, recover the strychnine with chloroform, evaporate and reprecipitate the chloroformic residue from a few cc. of the alcohol-hydrochloric acid solvent, with the platinic chloride reagent.

The chloroplatinate of strychnine is yellow in color, crystalline, and has a remarkable lustre. It contains about 62% of the alkaloid and 18% of metallic platinum.

The chloroplatinate of quinine has an orange color and an amorphous appearance.

A trace of chloroplatinate of quinine gives an amorphous appearance to the chloroplatinate of strychnine, a valuable indication of the purity of the strychnine salt.

The amount of strychnine can be calculated from the weight of the chloroplatinate, from the amount of metallic platinum, or directly by the decomposition of the chloroplatinate.

By this method it has been found possible to determine the strychnine in a mixture of .060 of quinine and .002 of strychnine, being about the proportions found in such preparations as Elixir of Iron, Quinine and Strychnine.

In determining the strychnine in the Elixir of Iron, Quinine and Strychnine, it would be necessary to liberate the total alkaloids and proceed with the mixed alkaloids as directed. The quinine can be determined by difference or from the filtrate by making alkaline, shaking out with ether or chloroform and weighing the dried residue.

Gold chloride produces with strychnine a salt having a solubility and other properties very similar, if not identical, with that of the platinic chloride.

ON THE NATURE OF THE SUGARS FOUND IN THE TUBERS OF SWEET POTATOES.*

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(Received for publication, April 19, 1915.)

This is a second paper on the results of investigations, now being conducted in our laboratory, concerning the sugars in the underground reserve organs of plants.[1]

Stone[2] studied the carbohydrate constituents of the sweet potato and proved the presence of saccharose among the sugars. Other previous investigations have been concerned only with the general composition. Consequently we selected the sweet potato as the object of our second study on this subject, and investigated the nature of the sugars.

PREPARATION OF THE SYRUP.

One hundred gm. of the finely pulverized material were extracted in a Soxhlet apparatus with ether. After evaporating the ether, the oil-free residue was placed in a 750 cc. Erlenmeyer flask, and extracted daily with 300 cc. of 95 percent alcohol by heating in a boiling water bath, with a reflux condenser. About two weeks were required to remove the last traces of sugars. The combined extracts were filtered to remove the sediment which was formed on standing, and the filtrate was evaporated to a syrupy condition in a partial vacuum. The syrup was purified by shaking with absolute alcohol. The clear solution was decanted and evaporated down to about 10 cc.

The above method of preparing the syrup was once more repeated to get a sufficient quantity of the material for the investigation.

QUALITATIVE TESTS OF THE SYRUP.

The syrup gave the following qualitative reactions:

1. It had a very sweet taste.
2. It reduced Fehling's solution strongly; after inversion with hydrochloric acid the reducing power is much enhanced, showing the presence of both reducing and non-reducing sugars.
3. It gave Molisch-Udransky reaction with a-naphthol and sulphuric acid.
4. It gave the characteristic blood-red color on heating with picric acid and caustic soda (reaction of Braun for glucose).
5. It gave the characteristic fiery red color of ketose with resorcin and hydrochloric acid (Selivanoff's reaction).
6. It gave Pinoff's reaction with ammonium molybdate and acetic acid.
7. It did not show any pentose reaction by the phloroglucin method.
8. No mucic acid was produced upon oxidation with nitric acid.

* Journal Biological Chemistry, June, 1915, 503

[1] The first paper entitled On the Nature of the Sugars Found in the Tubers of Arrowhead, is published in the Journ. Biological Chemistry, xv, p. 221, 1913.

[2] W. E. Stone: Ber. d. deutsch. chem. Gesellsch, xxiii, p. 1406, 1890.

9. Saccharic acid was detected as acid potassium salt in the oxidized solution of the syrup.

10. It rotated the plane of polarization toward the right; after inversion it was slightly levorotatory.

11. It produced no characteristic mannose phenylhydrazone with phenylhydrazine, either in the original or in the inverted syrup. When the mixture in both cases was warmed in a boiling water bath with acetic acid, the yellowish, well crystallized osazone was produced.

12. Two drop portions of the syrup were placed on object glasses, and inoculated respectively with crystals of glucose, fructose, maltose and sucrose. After twenty-four hours the solution which had been inoculated with sucrose showed the formation of new crystals, while the others remained unchanged.

From the above tests it is evident that the syrup contains both reducing and non-reducing sugars. Moreover, it is safe to conclude that the presence of pentose and mannose molecules is excluded, since no characteristic reactions could be found, as above mentioned.

ISOLATION OF SUCROSE.

When the syrup was left untouched for about twenty-four hours, fine crystals were abundantly formed in it. A small amount of 95 percent alcohol was then added to the syrup, the mixture was filtered and the precipitate washed with absolute alcohol and ether. The sugar thus obtained was recrystallized from alcohol. After drying in a vacuum over sulphuric acid the purified sugar was about 2 gm. in weight.

0.6439 gm. of the sugar was dissolved in water, made up to 25 cc. and polarized in a 200 mm. tube, in a Schmidt and Haensch half-shadow polariscope. A dextrorotation of 9.9 on the scale was observed. The specific rotary power is

$$(a)d = \frac{9.9 \times 0.346 \times 25}{0.6439 \times 2} = 66.5 \text{ (at } 20°)$$

The specific rotary power indicates that the sugar under examination is sucrose.

PHENYLOSAZONE TESTS.

The mother liquor filtered from the sucrose crystals was concentrated again into a syrup, but it did not show any sign of forming new crystals, even after one week's standing. An attempt was then made to separate and detect the sugars as phenylosazones.

1 gm. of the syrup, 2 gm. of phenylhydrazine hydrochloride, 3 gm. of sodium acetate, and 20 cc. of water were mixed and heated in a boiling water bath. After fifteen minutes yellowish crystals had been produced. At the end of one hour and a half the heat was removed and the crystals were examined under the microscope. None of the other forms, besides the stellate form of yellow needle-shaped crystals which coincides with that of phenylglucosazone was observed. When cooled it was filtered and washed with a little water. Upon recrystallization from 60 percent alcohol and drying over sulphuric acid in a vacuum, the amount was 0.85 gm. The melting point was determined and found to be 204°, which coincides with that of phenylglucosazone. Consequently, the osazone under examination is phenylglucosazone.

1 gm. of the syrup was dissolved in 20 cc. of water and inverted with hydrochloric acid in a boiling water bath for about thirty minutes. After it was neutralized with sodium carbonate, 2 gm. of phenylhydrazine hydrochloride and 3 gm. of sodium acetate were added and the mixture was heated in a boiling water bath, exactly in the same manner as above described. After heating for one hour and a half, the crystals were examined under the microscope, but they were all uniform and quite identical with those of phenylglucosazone which was obtained in the previous experiment. When cooled, it was filtered and washed with a little water. The yellow crystals thus obtained were recrystallized from dilute alcohol and dried over sulphuric acid in a vacuum. The product weighed 1.06 gm., and the melting point was found to be 204°. The crystalline form and melting point indicate that the osazone obtained was phenylglucosazone without admixture of other osazones.

The osazone test which was made to separate and detect the sugars in the syrup thus did not yield results differing from those obtained by the qualitative tests, as already described. But, as a result of this experiment, the presence of maltose is excluded, since maltose, if present, would have formed an osazone of a melting point very similar to that of glucosazone, but easily distinguishable from the latter by its crystalline form.

SUMMARY.

1. Sugar of the sweet potato tubers is made up of both reducing and non-reducing sugar.

2. The reducing sugar consists of both glucose and fructose, while the non-reducing sugar is sucrose.

3. The presence of pentose, galactose, and mannose molecules is excluded. The presence of maltose is also excluded.

IPECACUANHA: BOTANICAL SOURCE—MEDICINAL VALUE.

MRS. HAMPTON RAY KENASTON.*



IPECACUANHA.—Portuguese form of the native Brazilian word, ipe-kaa-guene, which is said to mean "road-side sick-making plant," or a creeping plant that causes vomiting. The plants are perennial herbs 10 to 20 cm. high, with creeping, woody hypogeous stems. It is somewhat shrubby with leaves eliptical, entire, short-petiolate, and with divided stipules. The flowers are white and form a bunch of small flowers upon a long-stalked, terminal head. The fruit is a soft, dark, purplish-blue berry, with characteristic spiral arrangement of the carpels.

The part of ipecacuanha used in medicine is the root obtained from *Psychotria*, or *Uragoga (Cephaelis) Ipecacuanha*, a small shrubby plant of the natural order Rubiaceæ. It is a native of Brazil, growing in clumps or patches in moist shady

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forests of Brazil and Colombia and is also found in localities adjoining those mentioned, and thrives best in clay soil along the banks of rivers. While it requires a great deal of moisture, it cannot live under water, and consequently in Colombia it is found in its best development in regions where the rainfall is abundant, but where the rivers do not overflow. The root appears to be possessed of very great vitality, for in 1869 botanist M'Nab, of the Botanical Gardens of Edinburg, Scotland, discovered that so small a portion as 1/16 of an inch of the annulated root, placed in suitable soil, would throw out a leaf-bud and develop into a fresh plant, while Lindsay, a gardener in the same establishment, proved that even the leaf-stalk is capable of producing roots and buds; hence there is but little probability of the plant being destroyed in its native habitat. In gathering ipecac, the whole plant is uprooted and the thin and soft rootlets are thrown away and these discarded rootlets serve for reproduction, becoming in a year well-developed plants with valuable roots of their own.

The drug of commerce is procured chiefly from the region lying between the towns of Cuyaba, Villa Bella, Villa Maria and Diamantina in the province of Matto Grosso, and near the German colony north of Rio Janerio. The Sinu River is the ideal region for ipecac. The plant is found in abundance from near the headwaters of this river to near the city of Monteria, about 60 miles from the coast, where the clay formation which ipecac seems to demand stops, and below which point the river is subject to periodical overflows. The growth extends to several miles on each side of the river and also to the more important tributaries of the Sinu, the Esmeraldas, Verde and Manso Rivers. In regions where the water is excessive, such as the valley of the Atrato, the plant, though found, has a poor growth and is of an inferior quality.

The area from which Cartagena ipecac is derived is very extensive and somewhat scattered, though preëminently important is the region of the Sinu River and its tributaries. It is estimated, on good authority, that the land actually covered by the plant must embrace several hundred square miles, though any attempt at an accurate estimate would be useless. A relatively small amount of Cartagena ipecac comes from the Atrato valley, and it is of inferior quality. In addition to the two regions mentioned, there is another, nearer than either of them to Cartagena, called San Onofre. It is traversed by many small streams, none of them navigable. The soil, in addition to the clay so necessary for the successful production of ipecac, contains a considerable amount of sand and humus, formed by the decay of great masses of vegetable matter. The region appears to be of a character that is well adapted to the growth of both rubber and ipecac, which fact is worthy of note for the reason that, in many cases, the same people who gather ipecac collect the rubber milk and by combining the two industries, economy of collecting each is effected. While the ipecac found here in a given area is less than found on the Sinu or Atrato, the quality almost equals that of the Sinu and is far superior to that of the Atrato. A small amount of ipecac is derived from the tributaries of the Magdalena.

It is probable that other localities, especially the areas covered by the rivers and their tributaries flowing from the interior of Colombia into the Amazon and Orinoco are adapted to the production of ipecac and do produce it, but owing to the complete commercial isolation of these sections, their resources are not of-

fered to commerce or even definitely known. It is not thought that there are any new areas likely to be opened up to commerce in the near future.

The plant is not an object of cultivation in South America, though there is no reason why it should not be, except the fact that it is found wild in such abundance and is gathered from the forests chiefly by the Indians.

Ipecacuanha, although in common use in Brazil, was not employed by the medical profession of Europe previous to 1672. In France, within a few years after that date, it was employed as the chief ingredient in a remedy for dysentery, the secret of the composition of which was purchased by the French Government for 1000 louis d'or, and made public in 1688. The botanical source of ipecac was not accurately known until 1800. The great value of the drug in dysentery, and its rapid increase in price from an average of 2s 9½d per pound in 1850 to about 8s 9d per pound in 1870, led to attempts to acclimatize the plant in India, which, however, have not proven to be a commercial success, owing to the slow growth of the plant and the prices not being maintained at a figure that invited cutivation of the plant for commercial reasons, together with the difficulty of finding suitable spots for its cultivation.

Like other dimorphic plants, ipecacuanha ripens seeds best when cross-fertilized, and in consequence of the botanical culture, presents various forms. The diversity of form is most apparent in the young plants, and tends to disappear with age. *Triosteum Perfoliatum* is a plant belonging to the *Caprifoliaceæ* or *Honeysuckle Family*, which is used as a medicine and the rhizome of commerce is known as *Wild Ipecac*. It is a perennial herb with connate-perfoliate leaves and small, orange-red, globular drupes, growing in Canada and the United States as far west as Kansas. Its rhizome is yellowish-brown, somewhat branched, cylindrical, 10 to 20 cm. long, 10 to 15 mm. in diameter, with numerous cup-shaped stem-scars, and coarse, spreading roots; it is rather hard and tough and has a bitter, nauseous taste. *Triosteum* contains an emetic alkaloid, *triostine*, and considerable starch. The seeds of *triosteum perfoliatum* are sometimes roasted and employed like coffee, the plant being known as wild coffee.

The part of ipecacuanha used in medicine is the root, which is simple or divided into a few branches, flexuous and occurs in pieces about as thick as a goose quill, of a grayish-brown or reddish-brown tint externally, having a ringed or annulated surface and exhibiting a white or grayish interior and a hard wiry center. It has a faint rather musty odor, and a bitterish taste. The different kinds known in commerce, (gray, red, brown), are all produced by the same plant, the differences arising from the age of the plant, the mode of drying, etc. It is usually mixed with more or less of the slender subterranean stem, which has a very thin bark, and is thus very easily distinguished from the root.

The root is collected at all seasons, although chiefly from January to March, and is prepared for the market by mere drying. The activity of the drug resides chiefly in the cortical portion, and hence the presence of the stem diminishes its value. The variety imported from Colombia and known as Cartagena ipecacuanha, differs only in its larger size and in being less conspicuously annulated.

Ipecacuanha owes its properties to the presence of rather more than 1% of the alkaloid emetine, which, with the exception of traces, occurs only in the cortical portion of the root. It is a white, amorphous substance, has a bitter taste and

no odor, turning yellow when exposed to air and light, almost an insipid powder, moderately soluble in alcohol, and having all the characteristics of the vegetable alkaloids. There are also present a volatile oil, starch, gum and a glucoside, which is a modification of tannin and is known as ipecacuanhic acid.

In acute intestinal affections Ipecac has achieved its greatest reputation as a remedy, one of its oldest titles being *radix antidysenterica*. Its power over acute dysentery was known to Piso and Helvetius in the 17th century, and was mentioned by Balmain, (1797), Playfair, (1813), Twining, (1831), and Delioux, (1851). The reports upon its effect in acute tropical dysentery by Docker, (1858), attracted general attention, and since the latter date it has been universally recognized as a specific remedy for acute tropical dysentery and that of malarious districts.

The central emetics—those which produce their effect by acting on the vomiting center in the medulla; gastric emetics—those which act directly on the stomach itself.

Ipecacuanha is classed both as a central and as a gastric emetic; when taken by the mouth it acts as a gastric emetic before absorption into the sytem, and later produces a further and more vigorous effect by stimulation of the medullary centre. It must be remembered, however, that, valuable though these drugs are, their action is accomplished by so much depression, they should never be administered except under medical advice.

Emetine acts as a violent emetic in doses of 1/16 of a grain or even less, and is a powerful poison. The dose of the powdered root is ¼ to 2 grains when it is desired that an expectorant action result, and 15 to 30 grains when it is given as an emetic, which is one of its most valuable functions. The Pharmacopœias contain a number of preparations of ipecacaunha, most of which are standardized. A preparation from which the emetine has been removed and known as "de-emetized ipecacuanha," is now upon the market and used in some conditions.

When applied to the skin, ipecacuanha powder acts as a powerful irritant, even to the extent of causing pustulation. When inhaled it causes violent sneezing and a mild inflammation of the nasal mucous membrane, resembling a common cold in the head. Small doses of the drug act as a stimulant to the secretions of the mouth, stomach, intestines and liver, and it therefore increases the appetite and aids digestion; it is very frequently employed as an expectorant in cases in which the bronchial secretions are deficient.

Ipecac is imported into the United States free of duty and the annual importations are about 36,500 pounds, the larger portion of which was purchased from Colombia.

THE PHARMACY OF OXYPINENE.

HENRY C. BLAIR.

Oxypinene or Pinene Ozonide is so little known to pharmacists, that it may be well first to consider what is known about its composition chemically, and its use therapeutically, before taking up briefly the pharmacy of this most interesting substance.

In the May, 1915, issue of the American Journal of Pharmacy appears an article on Oxy-Pinenes by J. Emile Blomén, A. M., Ph. D.

He says: "Nowhere in nature can be found a more marvelous 'dead' organic substance than this one (Terebinthina) which, like a living being, inhales oxygen from the air and, transforming it, gives it off in another form."

We know that the pinene is the substance that "inhales" oxygen forming oxides which are given off as oxygen. If in place of oxygen, ozone is placed in contact with pinene, under certain conditions it will be "inhaled" and ozonides will be formed which will give off oxygen in a nascent form.

"When ozonides of pinene come in contact with moisture, they are decomposed, forming hydrogen peroxide and oxygen compounds or pinene. On prolonged standing or by heat, intermolecular or auto-oxidation will take place, resulting in the higher oxidation products of pinene, pinonic acid, etc."

Oxypinene or ozonide of pinene $C_{10}H_{16}O_3$ is a heavy viscid liquid of a light yellow or lemon color, having an agreeable turpentine odor and taste. It is soluble in some fixed oils, most volatile oils, chloroform, ether, alcohol, etc. Dr. Blomén promises to give a history of the uses of the oxypinenes and we hope he will include more of the chemistry also.

Oxypinene is prepared by exposing the vapor of pinene to a current of ozonized air, prepared by the action upon dry air of a high tension electrical discharge. An addition occurs between the pinene and oxygen resulting in the production of a dense white vapor (Oxypinene)."

This description is taken from the very able article by Dr. Bertram H. Waters, M. A., M. D., published in the Medical Record, February 13th, 1915. He says further, that in making oxypinene, only pure pinene and ozonized air should be used.

From clinical observation, Dr. Waters concludes that, "Oxypinene is useful in subacute and chronic affections of the respiratory system and is indicated as a mild stimulant to the mucous membranes and other tissues. When brought in contact with infected surfaces, it inhibits the growth of certain pathogenic microorganisms, and, by its pathogenic property, increases the circulation in the infected area, thus promoting the destruction of such organisms by phagocytosis."

It is reasonably certain that the treatment of wounds with old turpentine, found by surgeons during the Civil War so useful against gangrene, owed its efficacy to oxypinene in a crude state.

We have been informed that this same old-fashioned treatment is now in use in the German army.

* Read at meeting of Pennsylvania Pharmaceutical Association, 1915.

Ozonide of pinene, or Oxypinene as Dr. Waters calls it, is probably the most concentrated form of the valuable parts of "old turpentine" and therefore, should be particularly valuable in treating wounds, ulcers, etc.

In making pharmaceutical preparations of oxypinene, it must be remembered that decomposition with formation of hydrogen peroxide and pinene compounds takes place when water is used, and unless this is desirable, water is to be avoided.

Also all oxygen compounds loosely combined are more or less dangerous to handle unless care be used. High temperatures are to be avoided or exposure to air for any length of time. For instance, in making an ointment of oxypinene, such bases as ointment of rose water, hydrous wool-fat, etc., are to be avoided on account of the water they contain. Also the ingredients should not be melted together or if they are, the oxypinene should not be added until they are cold as any excess of heat will cause "the intermolecular or auto-oxidation" mentioned by Dr. Blomén in his paper above referred to.

In making suppositories, the heat required to melt a cacao butter base is so little that it need not be considered; but, as oxypinene does not combine well with cacao butter and as there are so many qualities of cacao butter on the market, and as there is another substance superior in every way and inferior in no respect, we need not hesitate to mention Stearate from Cocoanut Oil as being the best vehicle.

About one percent of oxypinene in rectal and vaginal suppositories has given excellent results clinically.

For use in treating eczema, skin affections, hemorrhoids, etc., a very efficient compound ointment has been in use for some time in an experimental way clinically. It is made by using a base composed of cocoanut oil and petroleum, talcum, starch, and zinc oxide, resorcinol and oxypinene.

Considerable experimental work has been done in an endeavor to produce a powder for dusting wounds and for internal administration in enteric pill or capsule form. It is believed that diatomaceous earth produces the best results.

A powder made by incorporating one part of oxypinene with two parts of kieselguhr is satisfactory. Such powder should be kept in sealed containers, for not only is oxypinene in this form liable to undergo auto-oxidation, but the kieselguhr seems to have a catalytic action, as the powder gains considerable in weight when exposed to air for a comparatively short time. One would suppose this extra weight to be water from moisture in the air, but careful chemical examinations has proven it to be oxygen. It is therefore a fact that through the catalytic action of kieselguhr, this powder absorbs oxygen from the air, which makes it a more valuable dressing for wounds than it would otherwise be.

Dr. Waters has found Oxypinene Vapor to be a useful form with which to treat disease. It is not a gas but a vapor and is made up of such finely divided particles, that it floats about in the air, resembling smoke. It is produced by bringing pinene ($C_{10}H_{16}$) vapor and ozonized air into intimate contact in a mixing chamber.

Pinene Vapor is produced by allowing a current of dry air to pass over the surface of volatile pinene. The ozone is made by silent electrical discharges in purified air. In order to avoid the production of nitrates and gaseous peroxides, the air which is used in generating oxypinene must first be freed from moisture; this also allows a higher degree of saturation with the volatile pinene.

Oxypinene Vapor may be inhaled mixed with the air of a room or directly from the generator by means of a suitable mask. For the treatment of superficial lesions on the surface of the body, it is used by allowing it to flow directly upon the affected surface.

When inhaled oxypinene acts as a stimulating expectorant. When applied to the skin it acts as an antiseptic stimulant.

SUMMARIZING.

Oxypinene is an ozonide of pinene, a chemical compound consisting of one or two molecules of ozone (O_3) linked to one molecule of pinene ($C_{10}H_{16}$) the active and chief constituent of oil of turpentine.

It is produced in two forms, a vapor and a pale yellow liquid of honey-like consistency.

On contact with moisture it breaks down into hydrogen peroxide, oxides, aldehydes, and ketones or pinene.

Exposed to high temperature auto-oxidation takes place.

It is useful in treatment of tubercular affections, wounds, ulcers, diseases of the mucous membranes, eczemas, hemorrhoids, etc.

It is an expectorant, stimulant and oxidizing agent.

Mixed with diatomaceous earth, one part to two parts, it makes a suitable powder for dressing ulcers, old wounds, etc.

Made into suppositories with stearate from cocoanut oil, about one percent strength, it is very useful in treating diseases of the membranes when a stimulating, mild antiseptic is required.

In a compound ointment combining astringent and drying properties with its antiseptic and stimulating effect, it is useful in eczemas and in certain cases of hemorrhoids.

The vapor may be inhaled from a generator or indirectly mixed with air.

The liquid may be applied to wounds in its strongest form.

THE QUALITY OF COMMERCIAL SUGAR OF MILK.*

J. W. ENGLAND.

Practically, all the sugar of milk sold in this country is of home manufacture and it compares most favorably with that imported from abroad. Our past experience indicates that the following specifications, in buying sugar of milk, will ensure a product of good quality:

"Sugar of Milk of acceptable quality must be a fine, white, dry, odorless powder of not less than 99.7 percent strength by polariscope containing not more than 0.020 percent of total nitrogen; not more than 0.020 percent fat and yielding not more than 0.050 percent ash. It must comply with the U. S. P. heavy metals test and be neutral to litmus paper. A ten percent aqueous solution must be clear, odorless, colorless and free from mechanical impurities."

* Read at meeting of Pennsylvania Pharmaceutical Association, June, 1915

Recent analyses of seventeen lots of 150 barrels of 200 pounds each, representing about 500,000 pounds, gave the following data:

No.	Ash	Nitrogen	Fat	
1	0.042	0.018	0.0084	(American)
2	0.024	0.013	0.0096	"
3	0.02	0.01	0.025	"
4	0.0209	0.0061	0.017	"
5	0.006	0.0064	0.0213	"
6	0.066		0.0026	(Foreign)
7	0.011	0.0055	0.014	(American)
8	0.010	0.0058	0.008	"
9	0.014	0.006	0.0052	"
10	0.01	0.006	0.0064	"
11	0.01	0.0083	0.0016	"
12	0.01	0.0083	0.002	"
13	0.01	0.0037	0.0168	"
14	0.022	0.03	0.0155	(Foreign)
X	0.23	0.0102	0.0722	Poor appearance, rejected
15	0.020	0.017		
16	0.04	0.0065	0.0045	(Foreign)
17	0.02	0.0069	0.0059	(American)

The percentage of absolute sugar of milk, as determined by the polariscope, was not less than 99.73 percent in any of the samples.

The most striking result of the analyses is the low content of ash. The U. S. P. (IX) standard for ash has been fixed at 0.25 percent; the largest percentages found was 0.066 and 0.04, foreign brands.

ANALYTICAL LABORATORY OF SMITH, KLINE AND FRENCH CO.

INVERSION OF CANE SUGAR IN SYRUPUS.*

JOSEPH L. MAYER.

In the February, 1902, issue of the Druggists' Circular (page 27), in an article, "Fallacious Tests for Glucose in Cane Sugar Syrup," I showed that Syrupus made according to the official formula by the hot process did not contain more than a very faint trace of reducing Sugar, but after being stored for five months in a corked bottle which had been placed in a cool, dark place, yielded a very heavy precipitate of Cuprous Oxide when tested with Fehling's Solution, indicating that much of the Cane Sugar had been inverted.

The tests made at that time being qualitative only the thought occurred to me recently to make a series of quantitative tests to determine exactly how much of the Cane Sugar was converted into Reducing Sugar, and the following work was therefore undertaken.

On January 28th, 1915, 1000 cc. of syrupus were made following the directions on page 435 of the U. S. P., VIII, for the cold percolation process and the same day 1000 cc. of syrupus were made by the method on page 435 of the U. S. P., VIII, for the hot process, each sample being placed in a sterilized glass stoppered bottle.

The syrup made by percolation had a specific gravity of 1.3148 at 25 deg. C.,

* Read before the New York State Pharmaceutical Association, June 29, 1915.

and the sample made by the hot process had a specific gravity of 1.3126 at 25 deg. C.

A quantity of syrup from each bottle was immediately weighed in tared 100 cc. graduated flasks and water added to make 100 cc. and the reducing sugar in 50 cc. of this solution determined by the following method of Walker and Munson:

(1) *Preparation of Solutions and Asbestos.*

(a) *Solutions.*—Use solutions (a), and (b), and (c) as given on page 42, under Soxhlet's modification of Fehling's solution.

(b) Asbestos.—Prepare the asbestos, which should be the amphibole variety, by first digesting with 1:3 hydrochloric acid for two or three days. Wash free from acid and digest for a similar period with soda solution, after which treat for a few hours with hot alkaline copper tartrate solution of the strength employed in sugar determination. Then wash the asbestos free from alkali, finally digest with nitric acid for several hours, and after washing free from acid shake with water for use. In preparing the gooch crucible load with a film of asbestos one-fourth inch thick, wash this thoroughly with water to remove fine particles of asbestos; finally wash with alcohol and ether, dry for thirty minutes at 100 deg. C., cool in a desiccator and weigh. It is best to dissolve the cuprous oxide with nitric acid each time after weighing and use the same felts over and over again, as they improve with use.

(2) *Determination.*

Transfer 25 cc. of each of the copper and alkaline tartrate solutions to a 400 cc. Jena or non-sol beaker and add 50 cc. of reducing sugar solution, or if a smaller volume of sugar solution be used, add water to make the final volume 100 cc. Heat the beaker upon an asbestos gauze over a Bunsen burner, so regulate the flame that boiling begins in four minutes, and continue the boiling for exactly two minutes. Keep the beaker covered with a watch-glass throughout the entire time of heating. Without diluting, filter the cuprous oxide at once on an asbetos felt in a porcelain gooch crucible, using suction. Wash the cuprous oxide thoroughly with water at a temperature of about 60 deg. C. then with 10 cc. of alcohol and finally with 10 cc. of ether. Dry for thirty minutes in a water oven at 100 deg. C., cool in a desiccator and weigh as cuprous oxide.

N. B.—The number of milligrams of copper reduced by a given amount of reducing sugar differs when sucrose is present and when it is absent. In the tables following the absence of sucrose is assumed except in the two columns under invert sugar, where one for mixtures of invert sugar and sucrose (0.4 gram of total sugar in 50 cc. of solution) and one for invert sugar and sucrose when the 50 cc. of solution contains 2 grams of total sugar are given, in addition to the column for invert sugar alone. (U. S. Dept. of Agr., Bur. of Chem., Bull. 107, rev., page 241 and 242.)

The cold percolation process sample contained .174% invert sugar.

The hot process sample contained .138% invert sugar.

The cane sugar from which the syrups were made was tested by the same method and contained .111% invert sugar, thus indicating that in the process of making the samples very little inversion had taken place.

The syrups were then placed in a cool dark place, samples being taken from them at frequent intervals and tested with the following results:

		Cold	Hot	Invert Sugar
January	28, 1915 (The day the samples were prepared)	.174%	.138%	"
February	10, 1915	.172%	.171%	"
"	25, 1915	.292%	.170%	"
March	9, 1915	.559%	.401%	"
"	23, 1915	1.123%	1.061%	"
April	2, 1915	1.807%	1.595%	"
"	9, 1915	2.029%	1.905%	"
"	15, 1915	2.367%	2.354%	"
May	6, 1915	3.411%	3.566%	"
"	19, 1915	4.978%	4.735%	"
June	3, 1915	6.586%	5.751%	"

These remarkable results not only disprove the statement very frequently made that in making syrups by the hot process much of the sugar is inverted, a statement which my original article above referred to disproved, but they also conclusively show that in making the samples by either the cold or hot process practically no inversion takes place. They show that upon standing the sugar in both samples becomes inverted, the inversion being greater in the cold process syrup than in that where heat is employed in the manufacture.

I am still at work on the samples and hope in my next paper on the subject to report further results of the investigation.

RESEARCH AND ANALYTICAL DEPARTMENT, RIKER LABORATORIES.

SOME EXPERIENCES WITH THE SALOL-COATING OF PILLS.*

J. C. AND B. L. DE G. PEACOCK.

The coating of pills with salol in order to render them insoluble in the stomach for the purpose of carrying the medicine into the intestines has been practiced for years past. Methods have been frequently described and one is set forth in the current edition of the National Formulary.

During the past two years salol-coated pills have been frequently called for, and the knack of salol-coating had to be developed by our prescription department. What is about to be said is by no means a discovery, but merely a recitation of experiences in the actual practice of the process, a few simple facts which may help those who are called upon to do this work for the first time.

Two methods of salol-coating have been suggested; first, that of dipping the pills into the melted salol by means of pins and rotating in the air until the salol has solidified, removing the pin when a sufficient coat has been taken on and closing the puncture with a drop of melted salol.

Second, the method in which the pills are placed in a vessel in which salol has been melted, and the vessel rotated until the salol congeals.

The second method is the plan given in the National Formulary.

The first method does not appear to have been as generally used as the second. It is very much more tedious to stick pins into the pills, dip them into the salol

*Read at the meeting of Pennsylvania Pharmaceutical Association, June, 1915.

and rotate a number of pills at one time, than to place the pills all at once, into a vessel, and rotate.

Besides, the salol sometimes chips off when the pin is withdrawn and the sealing produces an unevenness of coat which is not pleasing to the eye.

The second method is therefore much less tedious, and more rapid; and with a little practice gives excellent results both in the amount of salol applied and in the appearance of finished pill.

The pills which were most frequently ordered to be salol-coated, contained silver nitrate, sometimes with extract of hyoscyamus, and sometimes with opium.

The mass should be hard in order to get the best result. It is also desirable to have pills as nearly round as possible. The usual dusting powders can be applied, and while it is best not to leave more of this adhering than is necessary, the slight amount which may be needed in some cases is not objectionable. The size of the pill does not matter, although as in almost all pill work, a pill of one grain weight is easier to manipulate than a smaller one. In the experiments made, mass was added to the very small pills; powdered licorice root, kaolin, talc and confection of rose were used with good results.

The National Formulary (III) page 122, Section 2, enteric pill-coating, paragraph b, Salol-Coating, reads as follows:

"The pills, carefully freed from dusting powder are dropped into a capsule containing enough salol (approximately 0.06 gm., (1 grain) to every 0.8 gm., (3 grains), pill), previously melted by the heat of a water bath and allowed to cool so that by passing the hand along the bottom of the dish there is scarcely any warmth felt, and the capsule is then rotated until the pills are coated and the salol has congealed. The process is repeated twice, each time reducing the salol about one-half. Finally a finishing coat is applied by using only sufficient salol to coat the dish when melted; the dish being now kept quite warm (almost hot), the pills rotated quite rapidly until they are quite shiny, then turned into a cool dish, and the rotation continued until the pills are cool."

This plan was followed to the letter in the first several attempts which were made. The results, however, were not satisfactory, mainly because an insufficient quantity of salol is ordered for the first three treatments. Further, the use of more heat in the fourth treatment is very likely, in fact almost certain, to melt off some of the salol; and again, transferring to a cool dish produces uneven or irregular coating due to a too sudden reduction of temperature.

It was therefore found better to take more salol with which to start the treatment, and also, as nearly as possible, to use the same temperature in all the treatments. After a number of experiments, the following plan was worked out and has been used with constant success by a number of operators.

One of the most important details from the standpoint of practice is the selection of the vessel in which to do the coating.

Concave capsules and similar shaped vessels are not well suited because the pills tend to roll out during the rotation of the vessel, or at least get to some extent out of contact with the melted salol.

Flat bottom vessels with flaring sides are better suited because the pills are not so likely to be thrown away from the salol during rotation. But there is still the chance of the pills flying over the flaring sides. The vessel which ap-

pears to be best suited is a flat-bottomed, white enamel pan, with perpendicular sides; a handle gives additional convenience to this vessel; a size convenient for coating 24 to 30 pills is about 4 inches in diameter by about 1¾ inches deep. The inner surface should be smooth. The material of this vessel seems well adapted to the gradual cooling of the salol, a feature which is essential to success.

The perpendicular sides of this vessel prevent the pills from flying out, and the flat bottom keeps the pills in constant contact with the salol.

For 24 pills of 1 grain each, twenty grains of salol were usually found to be sufficient for the first three applications, and for the fourth and final treatment about seven grains additional were required.

The vessel having been decided upon, the proportionate amount of salol is placed in it then warmed over a flame (a water bath is not needed), just sufficiently to melt the salol, and the liquefied salol flowed over the bottom and into the angle of the vessel. The temperature is now allowed to fall until the salol is nearly ready to solidify, at this point the pills are placed in the vessel which is immediately rotated to prevent the pills from sticking together either from capillarity through melted salol on neighboring pills, or from sudden reduction of temperature, congealing the salol on the pills.

A thump against a block or the hand will separate pills when rotation alone does not.

Rocking the vessel at an angle will also keep the pills separated and in motion well suited to proper coating. The pills must not be rotated too rapidly, even in the flat bottomed dish with perpendicular sides, as the contrifugal force may throw the pills against the wall of the dish and out of contact with the salol.

Resting the vessel upon the counter or the hand during rotation, and using just enough rotation to keep the pills separated, gives the best results. The vessel should be rotated or rocked until free from sensible heat. The pills are then turned into a box. The coat of salol taken on in the first treatment will not usually mask the color of a black pill.

For the second treatment the dish is again heated, just sufficiently to melt the salol remaining; when it has cooled to some extent, the salol still liquid, the pills are put back into it, and rotated as before until cold. The second treatment will show a decided change in appearance.

A third application of salol is made in the same manner. This treatment appreciably increases the shell of salol.

For the fourth coating it is necessary to supply more salol, usually about one-third of the original amount taken, it being added to whatever remains in the vessel. For the fourth and final coating the vessel does not need to be made any warmer than for the first three coatings, nor is it necessary to transfer the pills to another dish as suggested by the National Formulary.

The rough uneven appearance of the coating that may be met with in one's first efforts can be repaired by heating sufficiently to melt off all the salol, and then resorting to proper conditions. This rough appearance is usually due either to insufficient salol or to a sudden drop in the temperature of the melted salol. Should the partly coated pills be thrown into a vessel that is too hot, the salol will be melted at the point of contact and the pills show unevenness when salol

has been lost or even bare spots. To remedy this appearance, melt off all the salol and return to the conditions outlined.

As to the number of pills that can be coated in a vessel of given size from twenty to thirty can be conveniently done in the one described. Even fifty can be done in this vessel, but experience will be needed; for fifty or more pills a larger dish should be provided, or the lot divided for treatment.

To indicate the wide scope of possibilities in salol-coating, pills which had been massed with petrolatum have been coated.[1] Gelatin capsules are also ordered to be salol-coated. This can be done by the same method. Even hard capsules containing liquids such as creosote can be coated by first placing the capsule inside of a slightly larger one.[1] Soft elastic capsules may also be enveloped in salol as the sample shows.

A MEDLEY.*

GEORGE M. BERINGER, JR., P. D.

Few men have so many problems and difficulties presented to them in their daily work as does the pharmacist. Accidents happen, preparations go wrong, materials are spoiled or rendered unfit for further use, by what, to the casual observer would seem the sheer perversity of the things themselves. To him who yields without struggle to such conditions, life is but "an empty dream." To him who, by the application of some almost insignificant bit of knowledge, conquers them, there comes the wild joy of wresting from an apparent defeat, an assured victory.

An illustration is furnished by a happening of a few months ago. A barrel of potassium bicarbonate, of German manufacture, had been on hand for some time. It was lined with parchmentized paper. Through some defect in the manufacture of the paper or the action of the salt upon it, the paper began to disintegrate. The more one tried to separate the salt and the paper the more they mixed. A boy was put to work spreading it on a table and picking out the bits of paper. It looked all right, but the first pound sent out was returned in a hurry. The paper was still there.

With the facilities at hand, recrystallization was out of the question, but nearly 200 pounds of material could not be wasted, especially, in the face of a rising market. Then came the magic inspiration of the electric fan. A small fan was set awhirl at one end of a long, narrow table. The table was covered with clean, heavy paper, and, along the edges was placed a row of wooden boxes to prevent the potassium bicarbonate from rolling to the floor. The end was left open.

Through the swift current of air, passing along this narrow channel, the material was allowed to drop, a handful at a time. Away went the paper—big bits and little bits—in a merry whirl, while the heavy chemical—bright and clean—dropped on the table—freed from its troublesome companion. Scarcely a pound of material was lost.

[1] Samples were shown.

*Read at the meeting of the New Jersey Pharmaceutical Association, June, 1915.

CLEANING CAPSULES.

How do you clean capsules after you have filled them with powdered material? Do you wipe them on the towel at the prescription counter? Whether that towel is clean or otherwise? Well, don't confess what you do—just try this. Take a piece of absorbent gauze of such size that it can be folded into a square of eight or ten inches, having four thicknesses of material. Place the capsules to be cleaned in the center of this. Gather up the corners and edges of the gauze into one hand, in such a manner that the capsules are suspended in a loose bag. Now rub this bag across the palm of the other hand a few times, pressing firmly. Each capsule is rubbed between the layers of gauze, and every particle of powder is removed, leaving it bright and clean.

GRANULATING.

You are in a hurry for some camphorated oil. You crush the camphor into coarse lumps, and throw it into the oil, put the mixture on a water-bath for an hour or so, and return to find lumps of camphor still in evidence. Then, if you are of that temperament, there follow a few splutters, dashes, blanks and exclamation points, but the camphorated oil is still unfinished. Before you try it again, go to your hardware dealer and spend from 75 cents to $1.25 for an almond grater. Put your camphor into this machine, a few lumps at a time, turn the handle, and have the camphor in an almost uniformly fine granule. Add this to your oil. Put it on the water-bath and have your preparation—less the dashes, etc., in fifteen minutes.

Speaking of the almond grater, you will be surprised at the number of uses you will find for it. You can granulate castile soap for making soap liniment. You can granulate opium, if you make preparations of that drug. And you can granulate almonds and make your almond meal from real almonds.

SAMPLING NIPPLES.

Take a smooth piece of wood of convenient length—about one-half inch thick and six inches or more wide. Sand paper this perfectly smooth and mark off points one and one-half inches apart each way to the same number as you have styles of nipples. Attach three-fourths inch, or any convenient size, wooden button moulds, which you can obtain at any store dealing in dress making goods, at each point, by means of small brass screws, and over each peg, thus formed, a nipple is stretched. For larger nipples, like Hygeia, use the top of turned wood boxes of convenient size, with a hole drilled through the middle. For smaller sizes like the Maw style, use large round-headed brass screws. The nipples can be arranged on the stock selves in the same order as on the display board described. If so desired, a small label can be put on the board in front of each nipple, giving the name of that particular style, or its number, so that one can be picked from the proper box without disarranging the rest of the stock. The nipples should not be sold directly from the display board, but should be changed at frequent intervals so as to keep them in good condition.

SUBSTITUTE FORMULAS FOR SPECIALTIES.

OTTO RAUBENHEIMER, PHAR. D.



The substitution of one drug for another has been practiced from the earliest times. Was it not Claudius Galenus, the great Roman physician-pharmacist, who was about the very first to prepare a lengthy list of drugs, "Quid pro quo," a list which remained in use until about the Sixteenth Century.

Even at the present time the manufacturing chemists and the retail pharmacists are advocating the substitution of sodium salts in place of potassium salts, owing to the fact that the latter are quite scarce and much more expensive on account of the European war. In connection with this it should also be remembered that sodium salts possess two further advantages over potassium salts, namely, that they are more soluble and have a smaller molecular weight.

So much for drugs and chemicals, that is, their substitutes.How about preparations? How about substitutes for some of the proprietary preparations or specialties? It is needless to point out that the two standards in pharmacy, the U. S. P. and N. F. contain such substitutes. It is for this reason that on numerous occasions both of these works have been severely criticized. Personally, the writer has always held the opinion that it was perfectly legitimate and proper for the pharmacist to manufacture such so-called substitutes, providing, however, he sells these upon their merit and does *not* dispense same when the proprietary preparations or specialties are called for. Let it be thoroughly understood that the writer does *not* advocate the substitution of such preparations in place of the proprietary articles!

On several occasions and again at the Nashville Convention of the A. Ph. A., I had the privilege to present a copy of the Formulary of Pharmaceutical Specialties published by the Luxemberger Apothekerverein. This little formulary gives a great many formulas for specialties from Germany, France, and even the United States. The Latin titles are followed by the name of the specialty, for instance, Linimentum Capsici Compositum (Pain Expeller), Emulsio Olei Jecoris Aselli (Scott's Emulsion), Antipyreticum Americanum (Antikamnia), and last, but not least, Bromidia (Bromidia Battle). This may serve as an illustration what the Luxemburg Apothecaries' Society is doing.

The writer has just received from the Deutscher Apotheke-Verein, Berlin, a copy of a booklet having the title "Sammlung von Vorschriften fuer Zubereitungen zum Ersatz von Spezialitaten des Feindlichen Auslandes," which translated into English means, "Collection of Formulas for Substitute Preparations of Specialties from Belligerent Countries."

The preface of the book tells us that owing to the existing conditions of war, these foreign specialties are partly unobtainable and should *by all means* be replaced by substitutes which the German apothecary can very easily prepare himself.

It is needless to say that principally French and British proprietary preparations are dealt with, for instance.

Capsules Guyot, Cascarine Leprince, Eau dentifrice du Dr. Pierre, Liqueur anti-goutteuse de Laville, Capsules Pautauberge, Grains de sante du Dr. Franck, Injection Brou, Pilules de Biancard, Quina Laroche, Sirop d'Aubergier, Sirop de Dusart, Vin de Dusart, etc., etc.

Bishops Citrate of Lithia, Easton's Syrup, Eno's Fruit Salt, Roche's Embrocation, Beecham's Pills, Calvert's Carbolic Tooth Powder and Paste, Elliman's Embrocation, Hazeline-Cream, Hazeline Snow, Morison's Pills, Pink Pills, etc., etc.

I find that about one half a page is devoted to Browne's Chlorodyne, and it is claimed that the formula given is the original one which has been supplied from a British source through apothecary Mandowsky of Hamburg.

Another interesting feature of this booklet is that there are two and a half pages of specialties which are arranged in a table, in case they merely consist of one ingredient, as f. i., Santal Midy=Caps. gelat. Ol. Santali 0.3 Gm.

The writer, as chairman of the Committee on Recipe Book of the A. Ph. A., was indeed pleased to receive this Formulary, which no doubt will come in very handy in the compilation of formulas. This little book will no doubt convince us of the proverbial German ingenuity and may well serve as an example to American pharmacy and to the American Pharmaceutical Association.

The College of Pharmacy, Jersey City, June 21st, 1915.

MODERN BUSINESS METHODS FOR PHARMACY.*

E. FULLERTON COOK, P. D.



Notwithstanding the many signs to the contrary, pharmacy retains today many features which are distinctly professional, although the commercial side is rapidly increasing in importance. The desire on the part of pharmacists in the past, to maintain ideals which they termed "professional" has largely been responsible for failure to apply proper methods to the drug business, and we face today a condition in some stores where the commercial side or the merchandising end of the business is entirely eclipsing anything of a professional character; yet in other localities there are many signs which indicate that professional pharmacy is coming into its own and is advancing to a point never dreamed of in the past. It is quite safe to predict that the future will more sharply draw the line of demarcation between the so-called commercial pharmacy where merchandising is given almost exclusive consideration, and the store or laboratory where the emphasis is constantly placed upon professional activities and scientific work. Even though this condition is true, it nevertheless remains as a necessity of modern business that both types of pharmacists, if they would continue to exist, must understand and adopt methods in the conduct of their business which insure a profit. Now, these methods do not differ materially in

* Read at meeting Delaware Pharmaceutical Association, 1915.

principle whether they are applied to the most ethical professional man in his relation to his patrons or whether they are enforced by the highly departmentized and commercialized drug store.

A recent article in one of the largest national weeklies described, in an exaggerated form, the condition which exists in pharmacy today. The successful old-time druggist, many years in business, learns of the anticipated opening in his neighborhood, of a so-called "chain" drug store, conducted by a corporation and managed on the most approved and modern business principles. According to the story, he immediately retires from business, feeling that he was incapable of successfully competing with such methods, and, in talking with his friend, predicts the failure of all of the other older stores in the town, very shrewdly saying that, "The only possible hope for successful competition with stores of this new type is to adopt all of the methods which they are successfully using, and do it first, and a little better." This is doubtless an extreme view, because a successful pharmacist in a neighborhood should have an invaluable asset in the confidence which the community places in him, and because of his personal relations with patrons, and yet, the suggestion to learn modern methods, and immediately introduce them into your own business is the best possible advice and is worthy of the most earnest consideration. It is the intention here to briefly outline some of the principles which are being advocated today for successful business.

The keynote and business text, which should be foremost in thought, continuously emphasized and always be a guiding motive, is *service* to the customer. The adoption of this principle by the proprietor and his clerks will answer many petty problems which arise, and insures at once the proper attitude toward customers. Someone has said, "Love your customers, for out of them are the issues of business life," and this is but another way of expressing *service*.

A second essential, equally important, which must not be lost sight of by a business man, is the assurance that a *profit* is forthcoming. In other words, the two parties to the transaction: he who receives the service, and he who renders the service must both receive value or the transaction is not ideal.

In order to insure service and a profit there must be intelligent management in a business. The proprietor or manager should not be concerned too closely with the more minute routine or detail. He should have time to study the entire field of operation and be able to lay his campaign with every branch of the service before him, and with an intimate knowledge of every factor. Roughly stated, the business should be before this executive head in the following four divisions: *Purchases, Sales, Expenses and Profits.* These four departments are interdependent and all essential; and each requires a special study and control in its relation to the others.

Purchases: This branch of the business is its very backbone. Facing aggressive competition, the merchant knows that if he would sell at a price which will appeal to the intelligent customer and yet make a profit for himself, he must buy goods at the right figure. The goods sold must be of a quality which the trade demands and the price one which will enable him to meet competition and yet make a profit. This means, *first*, an intimate knowledge of the demands of the community. *Second*, the value and variety of goods offered and the best and cheapest market in which to buy. *Third*, a close watch upon stock so that over-

stocking is avoided and yet sales not missed by being "just out." Over-buying is a serious menace to profits since a turn-over of stock six times a year requires half as much capital as a turn-over three times a year. *Fourth,* in the purchase of goods the important point of taking discounts for prompt payment must not be overlooked. If this is done even semi-monthly and the discount is only 1 percent it means 24 percent interest on the money thus invested. In addition to this, the discounting of bills insures a relation with the wholesale house which gives the business man many favors in the way of bargains and special prices. This business custom also establishes a type of credit which is from one standpoint very desirable; and lastly, but not least, the discounting of bills relieves the proprietor of the worry about unpaid accounts and large bills coming due, the worry from which would often incapacitate him for handling the many store problems which arise.

Sales: Under this head the proprietor of a store must consider every means by which increased sales can be secured. Goods which have laid upon the shelf longer than sixty days become a serious menace to the profit account since it means stock and capital tied up and not working. How can this be stimulated? The man who simply waits until a customer comes into the store because he happens to be passing that way will soon find that someone else has not waited for the "just happen tendency," but has drawn to his own store by good advertising that prospective customer of yours who "might" have come your way. Sales must be stimulated by legitimate advertising methods but do not forget, again, that the customer must receive *service* and be pleased by his purchase. If this does not follow, it were better that the sale had not been made. No more difficult handicap can be imagined than dissatisfied customers and, on the contrary, no better advertising can be secured than through pleased and satisfied cutomers. Advertisement is the steam, driving many a large business to success, but it must be carefully applied. Probably the best and at least the first advertisement that every drug store should strive to offer is a clean and attractive store, served by neatly dressed, courteous and competent clerks. No amount of other forms of advertising will be worth while if the customer does not find in the store the attractive feature described i. e., prompt and efficient service.

The store, itself, should be arranged so that suggestive salesmanship can be stimulated to the highest degree. For instance, all preparations which relate to the treatment of the teeth should be attractively grouped so that when a customer buys a tooth-brush it will be possible for the clerk to ask, in a proper way: "Have you ever tried this mouth wash, which we are specially recommending?" or a tooth-paste of exceptional merit may be referred to, etc. Other allied toilet articles or general merchandise which lend themselves to suggestive salesmanship should be grouped.

Needless to say, proper attention should be given to window decorations and a part of the money set aside for advertising should be used in making these attractive. It would be wise to make it the duty of one of the clerks to study up ideas for the windows and, under proper direction, do the decorating. Frequently, one clerk will be found peculiarly qualified to do this.

Other forms of advertising should also be conducted from time to time. Newspapers, trolley advertising, small monthly papers, circulars, samples, premiums,

etc., etc., as may be best adapted to the particular business. A specific sum should be appropriated each year for advertising and expended in ways which bring the best results. Sometimes a remodeling of departments, new prescription equipment, new cases, increased soda water facilities, etc., may be the best form of advertising for that particular time. It has been frequently stated that at least 2 percent of the total sales should be used in advertising in order that a business may be maintained at its present standard and at least slightly increased.

One feature which is often neglected in a drug store is the proper training of the clerks. The proprietor or manager should develop friendly relations with the clerks and gain their confidence. It is only by coöperation, by training the clerks in salesmanship as well as the technical side of the business and by drawing out ideas from them, that a sales force with anything like maximum capacity can be developed. Rewards should be offered for the best ideas and merit acknowledged where it is found.

Expenses: This part of the business deserves equal attention. The best laid plans for purchases and sales may go for naught if expenses are not maintained in proper proportion. The store is compelled to have certain fixed charges. As a rule these should not exceed 25 percent of the average selling price of the goods. If the expenses are a larger percentage than this in relation to total sales the manager faces two possible remedies. First, some expenses may be reduced or entirely eliminated. Secondly, if the expenses are essential then the volume of sales must be increased so that the percentage of expenses will be brought within that which is legitimate. Every expense should be carefully recorded and then critically analyzed. Often, all expenses of the business are not recognized. Probably one of the most frequent failures to accord an expense in the drug business is the salary of the proprietor. As proof that this must be considered an expense, it is only necessary to recognize that the proprietor without assuming the responsibilities or risks of business could receive elsewhere an equivalent salary, and as still further evidence it will be recognized that if he were sick or compelled to be absent, another man would have to take his place, and that salary charged as an expense of the business. Another item which is sometimes overlooked is rent for the store room when the property is owned by the proprietor. Again, recognize that if you did not occupy the room some other business house would be paying you rent and so your business occupying the building should also be charged with rent before a real profit is secured. Therefore, rent, light, heat, salaries, (including proprietor's), office expenses, (such as bill heads, letter heads, envelopes, postage stamps, account books, etc.), telephone expense, advertising, breakage and interest on borrowed money, licenses, drayage, etc., must all be taken into account in summing up the total expense. It is often possible when a man has been in business for several years to estimate what these expenses should be, and establish a budget at the beginning of the year; if this is exceeded in any one month the cause can be ascertained and the leak stopped. The chain stores have worked this out very carefully and if any store exceeds the estimated expense, say for light in one month, the manager must explain why. The importance of this is evidenced by the fact that net profits are often based upon only 5 percent of the sales, and if the expense has been planned at 25 percent and in reality, through carelessness, reaches 30 percent, the entire profit is wiped out.

Profits: As was stated at the beginning, a profit as a result of business is absolutely essential; otherwise, the business is a failure. How can this be insured? It is only possible through the establishment of a system for pricing goods and then working the system through the aid of accurate accounting. The vast majority of druggists in the past knew practically nothing about modern accounting. They were so overwhelmed by the daily routine and detail that no time was left for this important aid to success and the result only too often was "no profit" at the end of a year of laborious and exacting work. It is far better to devote a little more time to accounting so that the business is handled intelligently and a profit insured than to do a large business and find at the end of the year or five years of hard work that instead of a profit the result is bankruptcy. It seems hard to impress this fact upon many druggists but it is one of the things which the introduction of chain stores is compelling every business man to recognize, and this very fact will be a blessing in disguise to the pharmacist of the future.

Another point which has not been thoroughly appreciated is the fact that the Internal Revenue Department of the United States Government is checking up more and more closely those who should pay the income tax. The pharmacist who is conducting a properous looking business may at any time be asked to give an accurate accounting and failing to do so correctly, face the possibility of a heavy fine.

A system for pricing which will insure a profit if properly carried out was recently suggested by Mr. Liggett, of the United Drug Company. This outline may not be adapted to every business because as the amount of professional work, including prescription filling, increases, the first cost of goods decreases and the clerk hire increases, but it serves well to illustrate the point. It is as follows:

Assuming that the sales are $300.00 a month, and stating all percents as percent of the total sales, then:

Total sales	$3000.00	100 per cent
First cost of goods	2000.00	66⅔ per cent
Gross profit	$1000.00	33⅓ per cent

From this $1000.00 must now be paid all expenses, and from it must also come the net profit, if any is to be made. It should be divided about as follows:

Rent, heat and light (the only fixed charges)	$210.00	7 per cent
Clerk hire	360.00	12 per cent
Advertising	60.00	2 per cent
All other expenses	120.00	4 per cent
Net profit	250.00	8⅓ per cent
	$1000.00	33⅓ per cent

Finally, without giving extensive detail, accurate accounting is a prime essentail and at least three divisions are desirable for a store where the proprietor must keep the books. First, a loose-leaf ledger plan whereby the customer's credit accounts are properly handled; second, a satisfactory Stock Record with accompanying facilities for taking an annual inventory; and third, a complete record of every transaction connected with the business in some concise and yet efficient form.

Editorial

E. G. EBERLE, Editor.....63 Clinton Building, Columbus, Ohio

I WILL!

CATO for many years closed his address with a never changing charge that "Carthage must be destroyed" until the thought and determination became firmly fixed in the mind of every Roman.

The American Pharmaceutical Association endeavors always to be constructive and with the purpose of being of increasing service to pharmacy, persistently solicits accession of membership. A new year is beginning, for the annual meetings of the Association correspond to the commencement exercises of schools, and the best way to make resolutions effective, is not to procrastinate in the resolve. Every member of the A. Ph. A. must realize that he could each year have his name signed to at least one application for membership, if he was possessed with "that something" which activates the "I Will!" There are some who never permit a year to pass without one or more applications to their credit, why not everyone? The best time is Now. Place a card with the prescription "I Will!" on your desk and fill it.

An organization is representative of those who compose the membership and the progress of the association is a corollary to individual improvement. The progress of an association is thought in action. Gather individuals into an organization and assign to them a strict course of procedure from which they must not deviate and stagnation will soon result.

The American Pharmaceutical Association has an enviable history but its continuing strength is in the members who work for to-morrow instead of to-day, who try to find new ways and better ways for doing the work they are doing now, constantly improving the methods they are using and imbued with the spirit of altruism that has always characterized the Association.



LOOKING FORWARD.

AN editorial in a recent number of the Pharmaceutical Journal and Pharmacist brings to our attention that English pharmacy and pharmacists have very much the same problems to solve that engage us. So close indeed is the relation that it would be quite easy to adapt the editorial referred to for the Journal of the A. Ph. A., by simply using the designations and terms applied in this country.

The editorial presents that there are no fixtures in the universe of change—no oases of finality in the ceaseless struggle for principles and the deduction is made that no sooner is one set of adverse circumstances resolutely grappled with and overcome, than another, and perhaps more formidable series is generated on the debris of vanquished evils. Then various legislative actions are cited and the esti-

mate of the legislators is stated in very similar verbiage of dicta employed by us. We, evidently, are no more nor less reluctant to allow the full educative influence of the knowledge of perpetual succession of trouble in ever-changing guise, to direct our action by studied and systematic methods. We may theorize, criticize and even plan, but here our activity all too frequently ends.

A reorganization of the House of Delegates is contemplated and it is to be hoped that the great possibilities of such a body will be developed into deeds of usefulness. There are many opportunities for rendering service to pharmacy, but in utilizing these, the first essential should be a very lucid understanding of the promotions contemplated. "What are we here for?" is just as relevant a question in pharmaceutical as in political conventions.

We will not anticipate the program of action; this much however may be said, every pharmacist is concerned in the shaping of the future of his calling and should not withhold his voice from the counsels of the state associations so that the promotions of the House of Delegates may be co-operative. Every one of the state organizations should provide for systematic discussions of policies that may be adopted or endorsed and the respective state associations should see to it that every pharmacist, whether member or not, has an opportunity of participating in the consideration.

Legislation pertaining to pharmacy will doubtless have first attention. Just a few thoughts are offered: A thorough understanding of the motives which prompt legislation regulating pharmacy is necessary. Legislators are more easily persuaded by their constituents than any arguments that committees of pharmacists may present. Pharmacists are seldom represented in legislative bodies and few of the members have a knowledge of pharmaceutical needs, still they are usually very reluctant to accept of expert advice.

These statements suggest that means should be provided in advance, for enlightening those who legislate and more particularly to outline a plan of procedure and not become dependent on evolving a course of action on the spur of the critical moment and without the possibility of consultation. Whatever legislation is necessary should be carefully outlined, each measure drafted into a bill ready for action, and arguments for its support should at the same time be prepared, as few laws are enacted without a contest somewhere. Pharmacists should realize the necessity of having representation from among their own number, not only in state legislative bodies, but also in Congress. In the adoption of legislative proposals, uniformity should always receive most thoughtful consideration as well as the enactment of sane legislation.

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THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

PREFERENCE is still shown by some members of the Association for the former annual volume, others are advocating a semi-monthly publication. These are the extremes, with a growing preference for the latter. Many others would take this view if the Association received sufficient income, permitting of the issuance of a semi-monthly Journal, for with a monthly publication there is of

necessity a delay in printing some of the papers, read at the annual meeting, and this does not always do justice to the contributors.

It is hoped that the membership of the Association will increase numerically and provide larger revenue; the suggestion made by some that the annual dues be doubled would certainly not be conducive to the growth of the Association. There is only one other source of revenue and this is the advertising in the Journal. There are many who do not now patronize the Journal, whose advertising would be acceptable. It is somewhat strange that manufacturers of apparatus, appliances, prescription ware and even of supplies for manufacturing pharmaceuticals, have not availed themeselves of the opportunity the Journal offers in reaching a class of patrons, who are extensive buyers of these goods. Members will lend a helping hand, if they will bear this in mind when making purchases.

The Journal does not seek to become a competitor of trade journals, its field for securing advertisers is circumscribed, neither is it contemplated to bring other pressure to bear than the persuasion that patronage from the manufacturers will produce business for them.

While the suggestion for a semi-monthly publication has been carefully considered, a conservative view ought to be taken and a larger source of income be developed before incurring the greater expense that would obtain. The only production costs that would not relatively be increased are those of the office and editor.

The suggestion has been made also that the proceedings of the Association be not published in full, but more or less in abstracted form. It is extremely doubtful whether this is advisable. It is a difficult matter to condense the minutes of the convention and do everyone justice, or perhaps, better, in every instance give the thoughts that were intended by members participating in debate. The original minutes are always preserved for reference in case of dispute, but such a radical change seems very impracticable, if not dangerous. Some of the more lengthy discussions are now abbreviated, but only by excision of the less important remarks or duplicated statements.

When the present editor took charge of the Journal, he asked for suggestions, as to how the publication could be made of greater service, more interesting and valuable to the members. This invitation is now repeated; every member is asked to look upon the Journal as his and her publication and such personal interest should persuade them to assist in its production and promotion. The value of the Journal is realized now, and by thoughtful and careful co-operation it will become the strong incentive for enlisting many in the Association who are not members at the present time.

We know the membership of the American Pharmaceutical Association too well to permit of other conclusions than that the Association will become still more influential as a factor in American pharmacy and at no time in its history has the opportunity for development been greater. Some of the members are perhaps too theoretical, others somewhat impatient, but the Association maintains an equilibrium, while making safe and steady progress. The Journal subserves the Association and follows its dictates.

PAPERS.

LAST year the General Secretary was authorized, if he deemed advisable, to have papers printed in advance of the meeting. The only reason for not doing so this year was that the papers did not reach the chairmen in time. Members returning from the annual meeting find work waiting their attention, thereafter business matters interfere until the approach of next convention compels them to give time to the preparation of papers. Again, a late day has developed a subject of importance, and so most of the excuses are not make-shifts, but embody good and sufficient reasons for delay. When members have papers in preparation that they think should be printed in advance of the meeting, so that reprints may be placed in the hands of members in convention, such possibility will be promoted by sending them to the chairmen of the Sections, early enough to be edited and revised, if necessary.

Every paper should be accompanied by a brief abstract. This will assist the members in following the author in his presentation of the paper and should the editor desire to use all or part of it as an introductory to the article, the statements of the writer will be correctly interpreted.

Some articles are unnecessarily lengthy, frequently the only object of many lines is to embellish, occasionally there is needless repetition. This is a subject that concerns the reader and constitutes one of the trials of the editor. The judgment of the latter is not infallible but it may be taken for granted that he tries to show deference to the contributors. Notwithstanding this, a very creditable paper may not be available for use in the Journal, for no other reason than that the story might have been told in one-fourth the number of words and with better effect. This has no reference whatever to articles that would lose their value by abbreviation and thereby do the writer an injustice. Another class of lengthy papers in the acceptance or non-acceptance of which the editor may have an unpleasant experience, are those that can hardly be condensed and only interest a very limited number. And still another trial comes when a number of papers on the same subject, with comparatively slight differences are submitted about the same time. These are a few of the difficulties that should persuade writers to be more or less considerate in their judgment of the acts of the editor.

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WHAT IS A DRACHM?

IN a paper presented at the recent meeting of the Pennsylvania Pharmaceutical Association, and under above caption, Professor J. W. Sturmer takes issue with Doctor C. L. Alsberg anent his ruling that the designation, dram, shall be taken to refer to 1-16 of an avoirdupois ounce, or 27.34 grains.

No dvantage can possibly be gained by this ruling; 1-16 ounce is very infrequently used in commerce. Doctor Alsberg evidently did not consult those who are most interested and has certainly created an opportunity for confusion. The term, dram, is frequently mis-applied for 1-8 ounce; manufacturers make use of the latter designation for such fractional part of an avoirdupois ounce.

A ruling which would define the value of the weight-term, dram, as of sixty grains would be acceptable, first, it would do away with that denomination in the avoirdupois system of weights and secondly, there is every reason for simplifying the spelling of the word. The "ch" is not pronounced in English usage and for the Latin name, the translation would be just as proper as that of any other title or term. This then brings on the further thought that the use of the official English names in prescription writing is quite as convenient, just as definite and the chances are prescriptions would be more correctly written.

The unit of weight of the metric system is written both gram and gramme. The reason has been assigned, aside from the origin of the word, that gram, in writing, may be mistaken for grain and hence the spelling, *gramme*, is a safe-guard. Doubtless this is true, but except in print the word gramme is seldom given in full.

The change from cubic centimeter to milliliter should be acceptable and it is hoped physicians will drop the denomination "c.c." and write instead "mil." True it is that "mil" is a coined word, but of such is language. While the values of weights are based on measurements, the denominations of the different systems should not have similar names.

It is hoped that the American Pharmaceutical Association will approve the change from cubic centimeter to mil, and disapprove of the ruling made by Doctor Alsberg, and urge that instead, the value of a dram be fixed at sixty grains. Pharmacists ought to have established this valuation long ago by adopting *dram* as the English for the Latin, *drachma*. The Century Dictionary defines the word *dram* and refers the reader to this definition for the meaning of *drachm*, hence clearly expresses the preference of this authority.

F. G. EBERLE.

THE NUMBER AND KIND OF DRUG ADDICTS.*

M. I. WILBERT.

In recent years social workers, reformers and newspaper writers generally have vied with each other in the presentation of startling data regarding the number and kind of drug addicts in this country. In doing so they have established the general impression that those engaged in the various branches of medicine and particularly those engaged in the practice of pharmacy, have been delinquent in that they have failed to safeguard the sale and distribution of habit-forming drugs with the care that properly should have been exercised.

Among the statements frequently met with in current papers and periodicals the following are representative:

"More than two percent of the people of this country are addicted to the use of opium and cocaine, and this number is being augmented at the rate of 100,000 a year."

"Fully 90 percent of the opium we import is used for illegitimate purposes."

"For every ounce of cocaine employed legitimately there are 200 ounces consumed illegitimately."

"Physicians are responsible for at least 95 percent of the habitual users of opium, its compounds and alkaloidal salts."

"More dope fiends have been created by the refilling of prescriptions than in any other way."

"At least 10 percent of the 45,000 drug stores in the country exist largely upon the illegitimate sale of habit-forming drugs."

"Many of the proprietary remedies sold to the laity contain a sufficient amount of dope to develop and to maintain a drug habit."

"The use of heroin as a 'kicker' in patent medicines is comparatively common."

"The Harrison law, excellent so far as it goes, is effectively negatived by the exceptions included in Section 6. The most exacting dope fiend could not ask for a larger hole in the law. If he can get an unlimited amount of his favorite drug in a nostrum form anything else that the Harrison or any other law may or may not provide is a matter of indifference to him."

As has been pointed out before (P. H. Rep., 1914, v. 29, p. 3180) some, at least of these statements are not based on reliable data, while others, having the elements of truth, are misleading either because of their incompleteness or because of the partial misstatement of fact. While it is unfortunately true that the number of drug addicts in the United States is disgracefully large it does not, and of necessity cannot even approximate the maximum that has been stated.

Practically all of the opium and coca used in this country is imported through legitimate channels, and because of the comparatively high import tax considerable care is exercised to insure the reporting and recording of all of the products

* Read at meeting of Pennsylvania Pharmaceutical Association, 1915.

at our disposal so that we have fairly reliable data on which to base an estimate of the amount of either drug that is available for all purposes.

Converting the recorded quantities of the several drugs imported into average doses, as presented in the Pharmacopœia of the United States, we find that for some years the total amount of these drugs imported has been fairly uniform and will aggregate an average of approximately 2,500,000,000 doses of opium, its derivatives and alkaloids, and 325,000,000 doses of coca leaves and cocaine. These figures serve to definitely fix the amount of available material and quite regardless of the proportion of the several drugs that may be used legitimately or illegitimately the sum total of illegitimate use cannot well exceed the sum total of the available material.

A rather interesting source of information regarding the actual number and kind of drug addicts is available through the enforcement of the Tennessee anti-narcotic law of 1913. Lucius P. Brown, the State Food and Drugs Commissioner of Tennessee, in a recent report (Am. J. Public Health, 1915, v. 5, p. 323-333), says that after twelve months of operation there were registered in the State of Tennessee under the provisions of the anti-narcotic law 2,370 persons of all ages and years. These included 784 or 33.1 percent males and 1,586 or 66.9 percent females.

The average consumption per day of the morphine addicts was 8.5 grains or approximately 1000 doses each month or 12,000 doses a year. The State of Tennessee contains slightly more than 2 percent of the total population of the United States and on the supposition that the same ratio of addicts and the amount of material consumed will hold good throughout the country we would have a total of something more than 118,000 drug haibtués consuming approximately 1,416,000,000 average doses per year.

Granting the somewhat improbable assertion that 90 percent of the opium imported is used illegitimately at the rate that it is said to be consumed in the State of Tennessee we could have, as a maximum, not more than 187,000 users of opium, its derivatives and alkaloids, in all parts of the United States.

In regard to the use of cocaine a recent authority asserts that one ounce of cocaine is enough to keep 50 fiends thoroughly well doped for a week, or in other words, that one ounce of cocaine is enough to keep 1 fiend thoroughly well doped for a year.

Granting that all of the available 150,000 ounces of cocaine were used illegitimately there could be at this rate a total of 150,000 cocaine fiends in the United States.

That this estimate is somewhat high would appear from the report by C. G. Steinmetz, Jr., (J. Am. M. Assoc., 1915, v. 64, p. 1271), who made a study of 15 cases of cocaine habit acquired by men employed where the drug was manufactured. The daily quantity taken varied from 20 to 60 grains; the method of taking was solely by snuffing it. Even on the basis of the lower quantity the consumption per annum would be in the neighborhood of 15 ounces and thus reduce the possible number of cocaine fiends very materially.

Pharmacists who have been unfortunate enough to meet with patients addicted

to the use of cocaine will appreciate that the figures given by Steinmetz are much more nearly in accord with actual practices than are the figures previously quoted. Taking all the available facts into consideration it would appear that the estimate made by the Committee of the American Pharmaceutical Association some years ago, that the drug addicts in this country do not exceed 200,000 in number is approximately correct even at the present time.

That the previously made estimates of the number of drug addicts in this country were altogether erroneous is further evidenced by the published reports on hospital admissions since the Federal anti-narcotic law came into effect. It had been predicted that the result of the enforcement of this law would be a besieging of hospitals by drug addicts and a crime wave of national scope accompanied by a trail of suicide and death. While the effect of the enforcement of the Federal anti-narcotic law has been clearly evidenced by hospital reports the results have been by no means so far reaching or so startling as had been expected.

The most shocking of the several available reports is that of Wm. D. McNally, Coroner's Chemist, Cook County, Chicago, (J. Am. M. Assoc., 1915, v. 64. p. 1264), who states that during the month of March, seven deaths occurred in Cook county that were indirectly due to the sudden cessation of the use of morphine. Four died from taking an overdose of morphine. One of the four died from taking an overdose of "Dr. Weatherby's Remedy," a morphine cure containing over seventeen grains of morphine sulphate per ounce. During the month of December, 1914, not a single death occurred in Cook county from morphine. During January and February the record shows one death for each month.

Clifford B. Farr, (J. Am. M. Assoc., 1915, v. 64, p. 1270), reports that since the enactment of the Harrison law the number of admissions to the Philadelphia General Hospital of cases of morphine and heroin addiction has markedly increased. In the first 68 days of 1915, 86 patients addicted to heroin were admitted, while in 1911 there was not one.

Other cities have reported similar results but so far as known the amount of suffering has not in any way measured up to the results that were predicted by newspaper writers and others when the Federal anti-narcotic law was under consideration.

Now just a word in regard to the origin of drug addiction. C. E. Terry, City Health Inspector of Jacksonville, Florida, in the report of a study of local conditions (Am. J. Public Health, 1914, v. 4, p. 32), states that of 213 cases of drug habituation studied by him personally their origins in the order of their frequency were as follows:

Through physicians' prescriptions or treatment personally administered 54.6 percent.

Through the advice of acquaintances (for the most part themselves users), 21.6 percent.

Through dissipation and evil companions 21.2 percent.

Through chronic and incurable disease 2.4 percent.

The conclusions reached by Terry agree very well with those enunciated by Brown that from 90 to 95 percent of the persons habitually using narcotics do so entirely unnecessarily.

It should be remembered that the figures quoted above refer solely to the number and kind of addicts, generally recognized as such, who use narcotic drugs in comparatively large amounts. There is still another, and a very pathetic side to the drug addict problem that has as yet received altogether too little attention. This problem involves the ways and means of generating the habit and also includes a consideration of the unfortunate who for one reason or another feel compelled to continue the use of comparatively small amounts of a narcotic drug.

Practically all authorities are agreed that the continued use of cocaine is a vice rather than a disease and the Federal as well as State anti-narcotic laws appear to recognize this fact and provide special safeguards to prevent the indiscriminate sale or distribution of even small amounts of cocaine or of preparations containing it.

With opium, morphine and related products on the other hand no such precautions have been taken despite the fact that addiction to the use of these drugs is generally recognized as a condition over which the individual patient has little or no control.

Up to the present time altogther too little authoritative information is available regarding the origin and subsequent progress of the condition commonly described as morphinism, because physicians usually see only the fully developed cases or the at times spectacular end results.

The morphine or opium addict, as a rule, is secretive and generally seeks relief in ways that are destined to make him an easy prey for the charlatan or advertising quack who promises a positive cure with secrecy.

Lambert, Towne, and others, who have made a study of drug addiction, agree with the conditions of Terry quoted above that a very large proportion of the persons addicted to the use of opium and its alkaloids have acquired their habit from the thoughtless renewal of prescriptions containing narcotics or by self-medication with preparations containing comparatively small quantities of an opiate.

In this connection it may be said that it is not generally realized that the taking of even small doses of opium or morphine, at regular intervals for a continued length of time will be more likely to develop the opium habit than the occasional indulgence in larger quantities.

It has been asserted (Pettey, G. E., J. Am. M. Assoc., 1913, v. 61, p. 566), that the average person will develop an addiction to opium or one of its alkaloids after thirty days of daily use and that after the continued use of such a drug for three months or more, it is practically impossible to discontinue its use without medical aid.

With these several possibilities fairly well established it would appear to be unfortunate to endorse or even to countenance exception clauses in anti-narcotic laws, such as Section 6 of the Federal law, which permit of the indiscriminate sale or distribution of preparations that not alone may but positively will establish a habit that once established cannot readily be overcome.

In the Federal anti-narcotic law we have the possibility of an accurate survey of existing conditions in connection with the use and abuse of certain narcotic drugs. The findings if they can be made a matter of record will place the blame for the illicit use of proscribed drugs where it rightfully belongs and will suggest ways and means for correcting existing abuses.

To secure efficient restrictions on the sale and distribution of narcotics, and to demonstrate that they are not primarily to blame for the generation and continuation of the addiction referred to, pharmacists individually should not alone be willing to comply with existing requirements under the law but should see to it that others engaged in the same line of business comply fully with the spirit as well as the letter of existing laws and regulations.

There can be no gainsaying the fact that the amounts of opium and of coca consumed annually in this country are out of all proportions to the actual need for medicinal purposes but to locate the existing leaks the followers of all branches of medicine, and particularly the men engaged in the practice of pharmacy, must make consistent and persistent efforts to purge themselves of even the suspicion of being directly or indirectly to blame for existing abuses.

THE STANDARDIZING OF PHARMACY LEGISLATION.*

J. H. BEAL, URBANA, ILL.

Judging from the multitude of restrictive and inquisitorial measures offered in the legislatures each year, the dealer in drugs and medicines should be regarded as a dangerous member of society, who needs to be closely looked after by those members of the community who find their chief enjoyment in regulating the business of other people.

In February of the present year, the writer began receiving abstracts of the bills affecting pharmacy which were pending before the various state legislatures. In April these abstracts made a pile nearly eight inches in height, each sheet representing from one to four or five bills. The original bills from which these abstracts were taken, all of them affecting pharmacy in some respect, if brought together in one place, would probably have made a pile of four or five feet in height, and this was for approximately one-half of the legislative season.

Some of these measures no doubt represented really needed and useful legislation, as they seem to have done in Illinois, but it is safe to say that the majority of them represented the meddlesome attempts of half-baked reformers who possessed only the vaguest of ideas on the subjects they sought to regulate, and their enactment would have been followed by grave inconvenience and damage to legitimate business without corresponding benefit to any one, unless to those for whom the bills sought to provide positions and salaries.

Some of these bills proposed to regulate the drug business in general; others confined themselves to particular features. Many of them related to the same subject, but no two of them were exactly alike in the regulations which they proposed to establish.

Those engaged in almost every other species of commerce and industry could tell the same tale of foolish, unjust and hurtful attempts to regulate the conduct of their affairs by legislative enactment, and the prayer of the whole business

*Read at the meeting of the Illinois Pharmaceutical Association.

world today is to be relieved from constant meddlesome and pernicious interference on the part of the law-makers.

The mental attitude of the modern business man bewildered in a maze of legal restrictions is cleverly expressed in the following jingle:

"There's law for this and law for that,
The man in business sighed,
It keeps me guessing where I'm at
And how my hands are tied.
"My great concern today is not
That I may shortly fail.
I have to give my every thought
To keeping out of jail.
"For profits that may comfort me
No longer can I plan,
It's taking all my time to be
A law-abiding man,
"Oh, sorry is the plight I'm in,
I have no path to choose,
The court will nab me if I win,
The sheriff if I lose."

—*Anon.*

There was a time when the manager of a business needed only to insure the efficiency of his manufacturing processes and the quality of his products, and to provide the means for bringing his wares to public attention. Today one of the most important agencies of any line of industry or commerce is some agency to prevent its destruction through ignorant and fanatical legislation. There is no class or kind of commercial or industrial enterprise in existence, no matter how honestly or carefully conducted, that would not be utterly destroyed if those who are concerned in it were to accept without protest all of the foolish and meddlesome measures proposed for its regulation. And, be it remembered, all of this mass, or rather "mess," of regulation is proposed in the name of reform and in the alleged furtherance of the general welfare.

Conservative and Radical Reformers.—Man is a moral animal, in aspiration and theory at least, and it is natural for him to seek constantly the moral improvement of his race and age. With such aspirations every one worthy of the name of citizen must be in sympathy, but there is a wide difference of opinion as to the best methods of bringing them to practical realization.

The conservative reformer views the improvement of society and the amelioration of social evils as a regular and uniform process of growth and education; the radical conceives reform as a violent and explosive destruction of old institutions and the forcible introduction of new ones.

The typical radical is always more or less of a bigot, and when hot on the trail of a real or imaginary evil, his sense of moral values is usually so much disordered that all other human issues sink into insignificance compared to the particular ism to which he is pledged. His convictions are so intense that they degenerate into obsessions, and he is likely to consider any method justifiable that promises to contribute to the success of his cause. Principles of equity and justice that have been recognized for ages are of no account with him, if they

interpose any obstacle to his short-cut methods, or would delay the immediate attainment of the object upon which his heart is set.

THE BIGOT'S CREED.*

His creed is:

"Believe as I believe, no more, no less;
That I am right, and no one else, confess;
Feel as I feel, think as I think;
Eat what I eat, and drink but what I drink;
Look as I look, do always as I do,
And then, and only then, I'll fellowship with you.

"That I am right, and always right, I know,
Because my own convictions tell me so;
And to be right is simply this, to be
Entirely and in all respects like me;
To question, doubt, or hesitate, is sin.
I reverence the Bible if it be
Translated first and then explained by me;
By churchly laws and customs I abide,
If they with my opinions coincide;
All creeds and doctrines I admit divine,
Excepting those which disagree with mine.

"Let sink the drowning if he will not swim
Upon the plank that I throw out to him;
Let starve the hungry if he will not eat
My kind and quality of bread and meat;
Let freeze the naked if he will not be
Clothed in such garments as are made for me.

" 'Twere better that the sick should die than live,
Unless they take the medicine I give;
'Twere better sinners perish than refuse
To be conformed to my peculiar views;
'Twere better that the world stand still than move
In any other way than that which I approve."

The Extravagance of the Reformer's Statistics.—One of the characteristics of the radical reformer is the extravagance of the statistics by which he seeks to show the imperative necessity for the immediate enactment of the particular measure which he happens to be advocating. If we accept his figures at their face value, we marvel that civilization has been able to persist under the burden of evil which his computations would establish.

As a rule we may safely scale the enthusiastic reformer's figures by ninety percent, and still have left sufficient to cover all of the evils which have actual existence, with a liberal unused margin around the edges.

This exaggeration by the reformer is due partly to the natural disposition of the enthusiast to accept as true whatever he wants to believe, and partly, in some instances at least, to a deliberate intention to deceive. On one occasion a state official charged with enforcing the food and drug laws asked my opinion con-

* Source unknown.

cerning a report which he was about to submit to the governor and legislature. My answer was that it would be a very good report if it did not contain so much fiction, to which he replied that if he did not "lie like sin" his department would not be considered of any account, and the legislature would not grant sufficient appropriations to pay half his inspectors and office force. In other words, the public has so long been fed upon extravagant statements concerning the evils in foods and drugs, that its jaded emotions will not readily respond to simple statements of the actual facts.

To the well-balanced, conservative citizen the law is merely a formal expression of the well-settled convictions of the majority, put into statute form for the purpose of compelling the obedience of that minority of the community who are not regardful of moral obligations, and to such a reformer the essential work of reform consists in the education of public opinion to the point where his own theories as to the citizen's civil and moral obligations shall become the faith of the many.

The theory of the radical is that statute law is an instrument for compelling other men to believe as he does, and instead of waiting for the slow and tedious process of education, he endeavors by frenzied declamation and the fury of his assault upon the general assembly to impose his will upon the majority.

In theory our newly-enacted laws represent the will of the greater number; in practice they represent the will of the comparatively small number who know best how to work the legislative machinery.

Nine-tenths of the laws enacted in any state the past winter would have failed if they had been submitted to a popular vote, either because a majority of the voters would have been opposed to their provisions or because they would not have cared enough about the measures to vote for them. That these measures were made into laws was not due to corruption or incompetence on the part of the law-makers, but rather to the defects inherent in our system of law-making, and to the fact that every man in public life soon learns that he has more reason to fear an active minority that will go to the polls and vote than a passive majority that will only stay at home and grumble.

The Sham Reformer.—Notwithstanding the bad manners of the honest radical and his constant attempts to reverse the laws of nature, he is much to be preferred to the commercial reformer, or the pestiferous individual who follows the mending of other men's affairs as a gainful pursuit. He is the wily individual who hitches his personal chariot to some phrase or doctrine that stands for a great moral principle, or which represents some grand humanitarian service, secure in the knowledge that with such a motive power he can travel farther on the road to successful popularity and with less critical inspection of his personal baggage than in any other way. He specializes in moral political issues, and is usually popular and prosperous.

The formula for passing an alleged reform bill through the easy-running law-making machine, provided it is one that does not involve a matter of party policy, is comparatively simple. Given a measure with a humanitarian title, a few sensational newspapers to print editorials and play up the propaganda, with half a hundred men in different parts of the state to write letters to members of the legislature, and the trick is done.

The passage of a bill of this character is a commercial proposition, like the building of a house or the buying of a farm, the two great essentials being to properly finance the movement and to select an experienced manager to conduct the campaign. So well is this understood that moral reforming, or the putting through of legislation that can be made to wear a moral label and appeal to the emotions and sympathies has come to be a regular business, like the conducting of carnival shows or of evangelistic revivals. You can hire a troupe of expert reformers just as you can hire a troupe of expert evangelists, with all of the machinery necessary to the conduct of their highly specialized profession, including the services of experienced spell-binders and leader-writers, and of one or more periodicals. The managers can furnish testimonials of former successful campaigns to show their ability, and you can contract with them either on a flat rate basis, or for a percentage of the gate receipts; or in case the reform is conducted under the auspices of a periodical publication, you can pay in subscriptions or by the purchase of advertising space.

It is by virtue of such methods and our loose system of lawmaking that we have laws passed ostensibly in the interest of the public health and welfare, but in reality to foster the business enterprises of those who financed the propaganda that procured their enactment; that in some states we have statutes expressly prohibiting the doing of things which the statutes of other states expressly command to be done; that in one commonwealth a given subject is legislated upon in one way, and in the adjacent commonwealth in an entirely different way, so that the man who does an interstate business must have as many different labels and as many formulas and methods of manufacture as the number of states in which he does business. In fact, under our hap-hazard and helter-skelter system, laws are so easily passed and so promptly forgotten that it occasionally happens that the same measure is placed upon the statute books twice, its first enactment having been overlooked by the enthusiasts who were more intent on passing new laws than upon enforcing the old ones.

A Proposed National Policy Regarding Drug Legislation—From the annual flood of new and unnecessary laws there is hope of at least a partial relief through a general agreement of the drug trade in all of the states to the effect that hereafter all drug legislation of every kind, no matter from what source it comes nor by whom presented, shall be resolutely opposed unless it has first received the consideration of the national pharmaceutical organizations and also of the association of the state where it is proposed for enactment.

The adoption of such a general policy would not mean that the drug trade intended to set itself in opposition to any proper measure for public protection, but it would be the giving of notice that the trade will no longer serve as a punching bag for every fanatic with an itch for publicity, and that hereafter proposed drug legislation shall be held up until its necessity is established upon some better evidence than the unsupported statements of its proponents, and until there has been ample time to analyze its provisions and to estimate their probable effects.

It is to be expected that the hysterical reformer who believes his pet proposition to be of supreme importance to human welfare, will assail any policy that will tend to prevent its immediate adoption. Our answer should be that if his propositions are not good enough to withstand the cool and discriminating dis-

cussion of the pharmaceutical associations, they are not good enough to be placed on the statute books.

The Preparation of Standard Forms of Food and Drug Laws.—A second step towards relief from the constant menace of fantastic legislation is for the drug trade through its national and state organizations to begin the standardizing of the laws relating to pharmacy by uniting in the preparation of a complete series of model forms or patterns covering every phase of legal drug regulation.

It is true that some model drafts have previously been issued, but they have usually represented only a single organization, and at most have covered only a fraction of the field of food and drug legislation. The series of drafts here proposed would be the result of the deliberations of every branch of the drug trade, and would cover every phase of the subject.

It is not likely that all of the associations would arrive at a perfect agreement upon every detail of the drafts, but it is morally certain that the more generally the drafts were discussed the fewer would be the points upon which there would be disagreement, and the final result would be a material step towards the standardizing of pharmacy legislation and towards substantial uniformity in the food and drug laws of all the states, not of course uniformity in all particulars, but uniformity in all matters of importance, with such variations only as were required to meet special conditions.

A practical example of this method of standardizing pharmacy legislation is shown in the method adopted for promulgating the N. A. R. D. model for a state anti-narcotic law to bring state laws into conformity with the Harrison Law. This draft was prepared by a special committee after much serious thought and consideration, but the committee was not so vain as to assume that its efforts were incapable of improvement. It is expected that the measure will be submitted in turn to the various state and national associations for further discussion and amendment, so that when finally completed it may be regarded as representing the very best thought of the entire drug trade upon this subject, and fit to serve as a reliable pattern which can be consulted whenever state legislation upon the subject of narcotic drugs is being planned.

A committee of the American Pharmaceutical Association is now working upon the draft of a general pharmacy law, which no doubt, will be also submitted to all of the other pharmaceutical associations for discussion and the suggestion of amendments.

It is not possible for any one individual, or for any single group of individuals to foresee and provide for all of the contingencies likely to arise from the introduction of new regulations into so complicated a business as the manufacture and distribution of drugs and medicines, and no measure proposing either to change or to add to the existing laws on the subject should be placed on the statute books before two or three years of consideration by the state pharmaceutical association.

Furthermore, this consideration of proposed legislation should not consist of its perfunctory reference to a special committee and an equally perfunctory approval of the committee's report, but of a thorough-going analysis of each section and provision by the whole association until the meaning and ultimate bearing of every clause and phrase have been developed so far as it is humanly possible to

foresee them. It would be a brief and trifling measure indeed that would not be worthy of an afternoon's discussion, and if it is one of any considerable length or complexity it is probable that the entire time of an annual meeting would not be too much for its adequate consideration.

It is no part of this plan to rush these model bills to the legislatures for immediate enactment. The prime object is to provide a series of carefully thought out, well-balanced, and accurately drafted measures to be made use of only when there is a real need of new legislation, or when it is necessary to quickly find a substitute for the crude and sloppy attempt of some crank reformer.

The Proper Education of Public Opinion.—Another essential in the campaign against useless legislation is the better education of the general public as to what constitutes necessary and proper regulation of the sale of drugs and medicines.

Every one owes it to his calling to protect its good reputation as zealously as he would protect his own. Every individual druggist, and every association should enter prompt protest through the press of their community against every extravagant tale of the sensation monger which reflects unjustly upon the drug business.

The American public is a fair-minded jury, but like every other jury it must base its conclusions upon the evidence and arguments which are brought to its attention. If we do not deny or protest against the sensational stories of the druggist's faults and crimes, we have no right to reproach the jury for accepting the alleged facts as true.

Not only is the general public disposed to be fair to the druggist, but it is already beginning to suspect that it has been victimized by the office-seeking patriot with his talk of wholesale adulteration of foods and drugs, and the reckless selling of narcotics and of dangerous and fraudulent medicines, and it is more than ever ready to listen to what the druggist has to say in his own defense.

The gods help those who help themselves.

REPORT OF COMMITTEE ON DRUG MARKET, PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.*

(1914-1915.)

The report of your Committee on Drug Market is given under world conditions which have created effects never before experienced in the drug trade. Dependent as we are upon Europe for many of our crude drugs and fine chemicals, a conflict such as is now raging there has great effect upon the drug trade in this country. Although we have recovered somewhat from the semi-panic and disorganized condition existing during the first few weeks after the outbreak of the war, there is still an inevitable shortage of some drugs, due in part to the severance of the means of communication and transit with those countries which have supplied us with them; the enlistment of men in the various armies and the use of many products in large quantities by the fighting forces of the nations at war.

* Presented to Pennsylvania Pharmaceutical Association, June, 1915.

Before the British Order in Council of last March went into effect it was not so very difficult to obtain supplies from Germany or Austria, but conditions since the order became operative have become more serious and are steadily becoming worse. Goods that were ordered before the British order went into effect were permitted to be shipped after that date, but considerable delay was usually experienced, sometimes extending over three or four months, on account of the requirement that contracts, invoices, etc., be submitted to the British Government for inspection. Cases are known where so much time has been lost on account of the negotiations that the foreign shipper in a neutral port has been compelled to return the goods to the original shipper rather than submit to the continued loss of interest on the money invested. The situation is also complicated on account of the fact that certain steamship lines trading between the United States and Holland usually refuse to carry goods of German origin. Their reason for doing so is to protect their vessels from delay or seizure by the blockading fleet.

A new development is seen in the fact that the drug centers of Europe have been shifted from Hamburg and Trieste to Rotterdam and until recently to Genoa. Marseilles is shipping more than the usual amount. New York has also benefited, as South American goods that were formerly obtained through Hamburg brokers are now shipped direct to New York and from there distributed throughout this country and those countries of Europe that can be reached. Since Italy's participation in the conflict it is practically impossible to obtain goods from Trieste.

However, in spite of existing conditions, it is a remarkable fact that there has not been much lowering of quality nor more than the normal amount of adulteration. Some errors have naturally occurred on account of the advent of brokers in neutral European countries into the drug trade who knew practically nothing about the goods they were handling; for instance, one broker who before the beginning of hostilities was engaged solely in the non-medicinal seed business wanted to know what a pharmacopœia was and to send him one.

Some of the goods examined owe their inferior quality to improper gathering, some on account of having been placed in dirty packages, some others on account of the depletion of the regular stocks and others on account of accidental admixture with small amounts of foreign substances. Instances of seeming inferiority are also due to confusion of standards as established by various manufacturers. A condition worthy of notice is demonstrated by the fact that drugs found adulterated last year were found to be authentic and of standard quality this year, showing the value of publicity and education.

An improvement has been noticed in the quality of some substances usually found inferior; for instance, it is now possible to obtain mineral oil that is tasteless, odorless, free from fluorescence and color and equal to the Russian variety. It is true that it is lower in specific gravity, but it is claimed by the refiners that a low specific gravity does not necessarily indicate a thin mineral oil.

Summing up the situation in the drug market at the present time, we have found that the quality of the goods on the market is equal to that existing last

year. Of the hundreds of samples examined there were only five cases of adulteration or substitution and only two or three instances of goods of grossly inferior quality. There is quite a scarcity of goods, such as antipyrine, carbolic acid, salicylic acid, sodium salicylate, salol, phenacetin, etc. The great demand for ipecac occasioned by the use of emetine as a remedy for pyorrhea alveolaris and the low price of menthol are also noteworthy.

Following its usual custom the committee has taken advantage of the generosity of the firms of H. K. Mulford & Co. and the Smith, Kline & French Co., and have taken the following data from their analytic files. The matter presented at this time does not of course represent all the substances examined by these firms, but are typical of those articles examined during the periods extending from May 31, 1914, to June 1, 1915.

Preceding the comments on the goods examined during the past year we present the following observations, contributed by Mr. C. E. Vanderkleed, the Chairman of our Committee, in regard to the labeling of U. S. P. substances:

The presence of qualifying words and phrases other than the letters "U. S. P." on U. S. P. substances and the absence of "U. S. P." on strictly U. S. P. substances is very common. It is difficult to fathom the reason for leaving off the letters "U. S. P." from the label of a U. S. P. substance when the substance is strictly U. S. P. since the statement that the substance is "U. S. P." adds distinction to the quality of the substance. Some of the qualifying words and phrases noted were:

"Formaldehyde U. S. P.—Methyl alcohol and water 62.7%—Formaldehyde 37.3%." In this case an ingredient, methyl alcohol, is stated which is not mentioned in the U. S. P., although of course it is commonly understood to be present to some extent.

"Formaldehyde U. S. P.—Methyl alcohol 62.7%—Formaldehyde 37.3%." This is intended to be the same as the above but the labeler accidently omitted the statement "and water."

"Iodine, Crude, Com'l." was strictly U. S. P. except that it was in lumps instead of plates.

"Calomel, White" was strictly U. S. P.

"Manganese Dioxide, Heavy" was strictly U. S. P.

"Acetic Acid 36%." Evidently "U. S. P." was intended to be the information conveyed by "36%." However, an acetic acid may be 36% without being U. S. P., but not U. S. P. without being at least 36%.

"Acid Acetic, U. S. P. 99%" was the label on a lot of Galacial Acetic Acid U. S. P.

"Ox-gall" without any modifying statement was used on a package of powdered ox-gall.

"Oil Sassafras, True," was strictly U. S. P.

"Caffeine Alkaloid" a common method of labeling caffeine U. S. P.

"Oil Rosemary, for Technical Use" was below U. S. P. requirements in total borneol content.

"Arsenous Acid, Pure" was strictly U. S. P.

"Acetic Ether, 90%" was strictly U. S. P.

"Oil Fennel Seed, Sweet," was strictly U. S. P.

"Colchicine Pure, Cryst." contained about 22% chloroform of crystallization.

"Colchicine, Amorphous" was practically U. S. P. in quality.

"Oil Lavender, English and French Blended, U. S. P." was strictly U. S. P.

"Oxalic Acid, for Tech. Use" contained 0.156% non-vol. residue, was a trifle dirty but otherwise U. S. P.

"Indigo-Disulpho-Acid, not to be used in food products," contained a trace of heavy metals.

"Saccharin, Insoluble," required 500 parts instead of the 250 parts of water required by the U. S. P. for solution. It was otherwise strictly U. S. P.

"Ozone Vanillin" was strictly U. S. P.

"Petrolatum U. S. P. Extra Amber" was strictly U. S. P.

"Petrolatum U. S. P. Lily Ambers" was strictly U. S. P.

"Glycerin Pure" gave faint opalescence in test for sulphate, contained a trace of butyric acid but was otherwise U. S. P.

"Chloroform for Anaesthesia. Contains about ¾% alcohol." Was strictly U. S. P.

"Citric Acid, U. S. P., Dried and Powd.," was U. S. P. citric acid powdered but not dried.

"Tartaric Acid, Dried and Powd., U. S. P.," was strictly U. S. P. The "dried" in the name is superfluous.

Acetone.—Of the ten lots examined, only three complied with all the U. S. P. requirements. Three samples had slightly higher boiling points and were slightly lower in strength, two other samples were low only in strength and two had high boiling points. The strength of the various lots ranged from 98.5% to 99.66%, and the boiling points from 56° C. to 59° C. Reported by J. G. Roberts.

Acid Acetic.—All of the samples examined were of good quality. Reported by J. G. Roberts.

Acid Cresylic.—One sample of 98% to 99% strength had a pronounced objectionable tarry odor. Reported by J. G. Roberts.

Acid Oleic.—The improvement noted in the 1914 report still continues as the four lots examined were all of U. S. P. quality. Reported by J. G. Roberts.

Acid Salicylic.—An examination of eight lots demonstrates the wisdom of raising the present U. S. P. melting point standard from 156° to 157° C. to 156° to 159° C. as proposed for the U. S. P. IX. Only three lots complied with the present requirement of 156° to 157° C. Three of the others melted at 158° C. and two at 159° C. All the samples were satisfactory in every other respect. Reported by J. G. Roberts.

Acid Sulphuric.—Two lots examined were found to contain 91.3% and 92.6%, respectively, of absolute H_2SO_4. Reported by J. G. Roberts.

Acid Trichloracetic.—None of the lots examined gave a faint reddish color with $FeCl_3$ as required by U. S. P., but even reagent acids refuse to conform to this test. Reported by G. E. We.

Aconite Root.—An improvement was noted in the quality of Aconite as all samples examined complied with the U. S. P. requirement of not less than 0.5% aconitine. The following results were obtained on four lots: 0.505%, 0.5%, 0.63% and 0.64%. Reported by J. G. Roberts.

Alcohol.—The only lot examined failed to answer the U. S. P. aldehyde-oak tannin test. This is not an unusual condition, however, as all of the samples examined during recent years have contained traces of these impurities. Reported by J. G. Roberts.

Alkanet Root.—An examination of an average of four samples revealed the fact that it contained only 4.55% of anchusin. The British Pharmaceutical Codex states that Alkanet Root should contain not less than 5%. The samples were unsatisfactory in appearance on account of the presence of an undue proportion of leaf bases which were attached to the upper portion of the root and which are claimed to contain no coloring matter. As alkanet root is mostly used as a coloring agent it can be readily seen that an undue proportion of leaf bases is undesirable. Reported by J. G. Roberts.

Aloes.—No improvement has been noted in the quality of Socotrine Aloes, as four lots examined were in a poor physical condition and failed to comply with several U. S. P. requirements. They contained excessive moisture and an abnormal amount of alcohol insoluble material. The moisture ranged from 15.0% to 23.1%. It was found also that the yield of ash from samples taken from various kegs was quite varied as the following results demonstrate: 4.4%, 4.5%, 5.2%, 4.67%, 4.71%, 12.2%, 4.95%, 13.52% and 30.3%. There was quite a difference in the physical condition of the contents of kegs comprising the various shipments. Some kegs were full of soft semi-fluid aloes of uniform quality, while others were only partially full and contained a mixture of hard and soft aloes. The latter

kegs were probably from an older lot as the aloes were quite hard at the top and sides and soft to within about three inches of the top. An illustration of the variable character of the contents of various kegs is shown by the fact that a sample from the driest keg contained 15% moisture and a sample from the softest contained 23.4%. Reported by J. G. Roberts.

Alum, Dried and Powdered.—Great improvement in moisture content has been noted, none of the samples containing more than 6%, which is close to our arbitrary standard of 5% moisture. Reported by J. C. McCaffrey.

Anise Seed.—About 1% of coriander seed was found in one lot and was probably present as the result of accidental admixture. Reported by J. G. Roberts.

Asafetida.—Two lots were up to the 50% soluble in alcohol requirement, running 61.9% and 59.0%, respectively. The ash contents were 13.1% and 22.5%, respectively. Reported by W. H. Orrick.

Barium Peroxide.—An examination of seven lots gave strength results ranging from 87.12% to 89.4%. Reported by J. G. Roberts.

Belladonna Leaves.—Quite a variation was found in the alkaloidal content of 23 samples examined during the past year as the results obtained ranged from 0.199% to 0.587% of mydriatic alkaloids. Most of the samples were of U. S. P. quality as only four yielded results below the U. S. P. standards of 0.3%. One sample examined was in a poor physical condition as it was found to contain about 50% of stems. The remainder was composed of buds and stems and badly broken and ground leaves. Two instances of substitution were encountered as one sample was composed wholly of phytolacca leaves and one lot of a mixture of belladonna leaves and scopola leaves. Of the twelve bales composing this lot two were practically all scopola leaves, five contained not less than 25%, four not less than 50% and one not less than 75%. Reported by J. G. Roberts.

Belladonna Root.—Three lots contained 0.46%, 0.522% and 0.48%, respectively, of mydriatic alkaloids. Reported by J. G. Roberts.

Benzoin.—The five lots tested ranged between 67.8% and 76.5% in alcohol solubility, and 0.96% and 1.62% in ash. Reported by G. E'We.

Betanaphthol.—Both of the samples examined were not sufficiently soluble in alcohol, one of them also contained a slightly abnormal amount of organic impurities. Reported by J. G. Roberts.

Bismuth.—The only lot examined contained minute traces of arsenic and iron. Reported by J. G. Roberts.

Burdock Root.—One of the two lots examined was grossly inferior. It was wormy, rotten and dirty and was considered a very undesirable article. Reported by J. G. Roberts.

Calcium Carbonate Precipitated.—Usually gives slight precipitate in test for "limit of iron, aluminum and phosphates." Reported by J. C. McCaffrey.

Calcium Chloride.—One lot left 1.4% residue in U. S. P. test for Magnesium and alkalies, while the U. S. P. allows only 0.1%. Reported by J. C. McCaffrey.

Calcium Glycerophosphate.—The following results were obtained on three samples of different makes when tested according to the methods proposed for the U. S. P. IX:

Sample Number	1	2	3
Proportion soluble in water	1 gm. in 50 cc.	1 gm. in 50 cc.	1 gm. in 50 cc.
Reaction of aqueous solution to litmus	Acid	Alkaline	Acid
Phosphates	None	None	None
Heavy Metals	None	None	None
Sulphates	None	None	None
Chlorides	Normal	Normal	Normal
Alcohol soluble impurities	4.19%	0.67%	7.27%
Moisture at 130° C	10.70%	7.32%	9.17%
Residue upon ignition	49.40%	55.82%	47.43%
Strength	81.68%	92.29%	78.42%

Sample No. 2 was the only one that met the requirements as it was above 90% strength and was alkaline in reaction. It contained some alcohol soluble impurities, but it was considered that the slight amount present was unobjectionable. Reported by J. G. Roberts.

Calcium Phosphate.—One lot contained chlorides in excess of U. S. P. allowance. Reported by G. E'We.

Cannabis Americana.—An examination of one sample showed it to be in poor physical condition and almost physiologically inert. A separation of seeds from three other samples revealed the presence of 1.47%, 4.22% and 13%. Reported by J. G. Roberts.

Chromium Sulphate.—The two lots examined assayed 85.4% and 87.1% $Cr_2(SO_4)_3$, respectively. Reported by G. E'We.

Colchicine.—Colchicine continues to contain excessive quantities of chloroform and moisture. The thirteen lots examined lost 2.2%, 4.2%, 8.3%, 9.1%, 9.3%, 10.3%, 12.1%, 12.7%, 12.9%, 22.3% and 29.2% of their weight at 102° C. the loss in each case, with the exception of the 4.2% figure, being due chiefly to chloroform. The lot losing 4.2% lost only moisture. There is probably no excuse for the excessive quantities of chloroform left in this alkaloid, as it is readily driven off on heating without appreciably affecting the color of the alkaloid. It is difficult to obtain a good qualitative reaction with the U. S. P. Hydrochloric Acid-Ferric Chloride-chloroform test if the mixture is heated only to boiling, as required by the U. S. P., but if the boiling is continued for one to two minutes guarding against excessive evaporation a good reaction is always obtained. Reported by G. E'We.

Colchicum Seed.—0.82% Colchicine was found in the only lot examined. Reported by J. G. Roberts.

Cresol.—One lot examined was of U. S. P. quality in every respect. This is an uncommon condition as the specific gravity is usually abnormal. The specific gravity of five other lots ranged from 1.029 to 1.045; two of these had too high a boiling point as only 32% and 64% of distillate was obtained between 195° and 205° C. Reported by J. G. Roberts.

Only two of the sixteen lots examined had a specific gravity within the U. S. P. limits of 1.036-1.038, these two having specific gravities of 1.037 and 1.038, respectively. One of the others had a specific gravity of 1.039, one had specific gravity of 1.016 and the other twelve ranged between 1.030 and 1.033. All of the samples answered the U. S. P. requirement of 90%, distilling between 195-205° C. except one of which only 86% distilled. It is almost impossible to obtain cresol soluble in 60 parts water, but as a rule the insoluble portion is very small in amount. All other U. S. P. requirements were complied with by the samples. Reported by G. E'We.

Cubeb Stems.—An experimental determination produced about 5% of oil by steam distillation. Reported by J. G. Roberts.

Dandelion Root.—No chicory or any other adulterant was found in five lots examined. Reported by J. G. Roberts.

Digitalis.—The physiological activity of three lots was satisfactory. Reported by J. G. Roberts.

Dragon's Blood.—A comparison of the coloring power of one sample with a control sample showed it to be only about ⅓ as valuable. Reported by J. G. Roberts.

Elm Bark.—Considerable of the brownish outer bark was found in one rejected sample. Reported by J. G. Roberts.

Ether.—An examination of two samples of ether gave the following results:

Sample Number	1	2
Physical appearance	Normal	Normal
Specific gravity @ 25° C.	.7149	0.7145
Residue from 25 cc.	.0004 gm.	.0004 gm.
Boiling point	35° C.	35.5° C.
U. S. P. excess of alcohol and water test	Normal (19.75 cc.)	Normal (19.65 cc.)

Neither of these samples complied with all the requirements of the U. S. P., as they contained aldehyde and an excess of acid. One sample also left a foreign odor when evaporated from filter paper.

Both samples complied with the U. S. P. boiling point requirement and the test to determine the presence of an undue amount of alcohol or water. They each had lower specific gravities than that specified in the U. S. P., but that is a desirable quality as it indicates a strength a little above that required by the U. S. P.

The U. S. P. states that moistened blue litmus paper should not be reddened when immersed in ether for 10 minutes and also that no color should develop when 10 cc. of ether is occasionally shaken during one hour with 1 cc. of potassium hydroxide test solution. Upon applying these tests to the sample it was found that an excess of acid was present in each of them as one sample reddened the paper in 1 minute and the other in ½ minute. The presence of aldehyde was proven when both samples imparted a yellow color to the potassium hydroxide solution. Reported by J. G. Roberts.

Flour (Wheat).—Gluten ranging from 11.5% to 14.5% was found in 29 lots examined. Moisture determination on five lots yielded results ranging from 9.95% to 12.8%. Reported by J. G. Roberts.

Formaldehyde.—All the formaldehyde examined exceeded in specific gravity the U. S. P. requirement of 1.075-1.081, averaging between 1.082 and 1.087; most of them gave reactions for chloride, sulphate and calcium in the U. S. P. tests for same, but were otherwise U. S. P. Reported by T. Liberati.

Glycerin.—Two lots were rejected on account of color and their undesirable dirty appearance. Reported by J. G. Roberts.

Guaiac.—Alcohol solubility ranged between 77.5 and 99.2%, only one being below U. S. P. standard of 85% soluble. Ash ranged between 0.51 and 5.70%, only one being above U. S. P. standard of 4%. Reported by G. E'We.

Hellebore.—1.21% of total alkaloids was found in a seventeen-bale lot. Reported by J. G. Roberts.

Hydrastis.—Each of the seven lots examined was found to comply with the U. S. P. standard of not less than 2.5% hydrastine and were found to contain the following amounts: 3.18%, 3.82%, 3.61%, 3.12%, 2.78%, 2.94% and 2.79%. Reported by J. G. Roberts.

Hydrogen Peroxide.—The twenty-three lots examined were satisfactory with the exception that two gave total solids of 0.0479 gm. and 0.0340 gm. per 20 cc. sample, in which test the U. S. P. requires not more than 0.030 gm. Reported by N. Saito.

Hyoscyamus Leaves.—Only one of the nine lots examined complies with the U. S. P. mydriatic alkaloids requirement. The other samples contained 0.04% to 0.06% of mydriatic alkaloids. Reported by J. G. Roberts.

Ipecac Root.—Results ranging from 1.83% to 2.06% of alkaloids were obtained in the examination of five shipments. Reported by J. G. Roberts.

Iron (Ferrous) Sulphate, Dried and Powd.—Continues to vary greatly in $2\,FeSO_4+3\,H_2O$ content. The fifteen lots tested ran as follows: 80.0, 83.1, 88.5, 91.3, 91.9, 92.3, 92.6, 93.4, 93.4, 95.2, 96.0, 96.0, 99.0, 103.0 and 104.8 percent. Reported by W. H. Orrick.

Kamala.—Adulteration was indicated when three samples yielded 53.5%, 49.1% and 56.9%, respectively, of ash. It is said that red sand is often added to such an extent that an ash yield of 40% to 60% has been obtained. Foreign pharmacopœias place the ash limit between 6% to 10%. Reported by J. G. Roberts.

Keiselguhr.—Much of the Keiselguhr offered for pharmaceutical purposes contains organic matter, from which this product should be freed by ignition. Reported by G. E'We.

Laundry Blue.—Several lots were not sufficiently soluble in water and gave a reddish tint to the aqueous solution. One lot was found to contain 0.7% of water insoluble material. Reported by J. G. Roberts.

Licorice Root.—12.27% of glycyrrhizin was found in one sample. One authority places the standard at six to eight percent. The residue upon ignition was 6.59%. Reported by J. G. Roberts.

Lupulin.—The ten lots examined showed:

Soluble in Ether	Ash
55.5%	8.23%
55.0%	7.72%
57.1%	7.60%
58.6%	10.70%
54.7%	19.40%
67.6%	13.30%
55.3%	18.30%
44.2%	28.40%
69.2%	12.80%
68.2%	14.40%

The U. S. P. requires 60% soluble and not more than 10% ash. Reported by L. H. Glickman.

Magnesium Carbonate.—Two of the six lots examined were low in MgO after ignition, these two assaying 92.6%, and 94.8%, respectively. Five of the six lots contained calcium in excess of the U. S. P. limits. The six lots were otherwise U. S. P. Reported by G. E'We.

Magnesium Oxide.—One lot contained only 93.9% MgO after ignition, U. S. P. requiring 96%. None of the lots examined during the past year gelatinized with water as required by the U. S. P. and most of them contained calcium in excess of the U. S. P. limits. Reported by G. E'We.

Magnesium Sulphate, Dried and Powd.—The usual variation in water-content was noted during the past year. The five lots examined contained 14.9%, 26.9%, 27.7%, 29.8% and 31.5%, respectively. Reported by L. H. Glickman.

Manaca Root.—During a recent examination of Manaca Root it was found that information concerning it is rather meager, so that it became necessary to base our results upon a comparison made with a sample that was declared to be genuine Manaca Root. During the examination of the literature on the subject it was found that some authorities claim that there is a red and a white manaca. The Red Manaca is given the most prominence and is the only variety described. The White Manaca is merely mentioned and no description whatever is available concerning it.

The samples submitted for examination were in large pieces about 18 inches long, knotted at one end and tapering from about 3 inches at the knotted end to about one-half inch at the small end which, however, had been cut. They had a yellowish-red color, a pronounced and distinctive odor and were covered with a thin, easily removed flaky scale. They were rather tough and broke with a fibrous uneven fracture. The bark was relatively thick and could be peeled with little difficulty. The authentic sample had a reddish-brown color and a similar but not as strong an odor. It differed also from the other sample in the fact that it is hard and has a thin, tenacious bark and breaks with an uneven fracture.

A microscopical examination revealed important differences in both the transverse and tangential sections. In transverse sections the medullary rays of the authentic sample are only one cell wide, while they were one to four cells wide in the trial sample. The pitted ducts are also slightly smaller in the authentic than in the trial sample. In tangential sections the medullary rays are few in the authentic sample and quite numerous in the trial sample. Starch grains are present in the medullary rays of both samples. In both the transverse and tangential sections the cork layer is much wider in the trial than in the authentic sample.

In accordance with the results obtained in the foregoing examination it was considered that the sample submitted for examination was not true Manaca but a closely-related species. Reported by J. G. Roberts.

Manganese Dioxide.—A sample of poor quality was examined which was only 65.66% pure (U. S. P. 80%), and which contained 17.13% of antimony sulphide and insoluble substances. Reported by J. G. Roberts.

One lot contained some insoluble residue in test for "antimony sulphide and insoluble substances," but was otherwise U. S. P. Reported by J. C. McCaffrey.

Manganese Sulphate.—Continues to vary greatly in water content. The seven lots examined contained 29.4%, 31.7%, 32.3%, 32.5%, 35.9%, 37.3% and 37.4%, respectively, four being above the U. S. P. limit of 32.3%. These figures for moisture were obtained by employing the lowest possible red heat on the manganese sulphate in a porcelain crucible. The U. S. P. directs that the salt be "gently ignited." Different loss in weight of the salt is occasioned at different degrees of ignition. Reported by G. E'We.

Milk (Dried).—One lot which contained only 0.56% fat was probably made from skimmed milk. Reported by J. G. Roberts.

Mustard (Yellow).—An examination of one ground sample yielded the following results: Ash 5.88%, ether extract volatile at 110° C. 0.1%, ether extract non-volatile at 110° C. 14.53%, moisture 6.33%, turmeric or charlock none. Reported by J. G. Roberts.

Oil of Anise.—Two lots which complied with all the U. S. P. requirements contained traces of lead. Reported by J. G. Roberts.

Oil Anise, Chinese.—Two samples were nil in optical rotation but answered all the other requirements for Oil Anise, U. S. P. The U. S. P. requires a laevogyrate rotation. Reported by G. E'We.

Oil of Cod Liver.—The saponification numbers of various samples ranged from 186.07 to 190, and the iodine numbers ranged from 151.44 to 162.9. Not one of the eight lots examined complied with the U. S. P. saponification value requirement of 175 to 188 and iodine value requirement of 140 to 150, but were all within the limit proposed for U. S. P. IX. Reported by J. G. Roberts.

Oil Lemon.—The six lots examined tested 3.52%, 3.56%, 3.63%, 4.08%, 4.18% and 4.32% citral by the method of J. C. Umney in Perfumes and Essential Oil Record, 1913, 4, 269. Reported by T. Liberati.

Oil Lemon, Extra Strong.—There is no declared citral content on this product and it varies accordingly. The two lots examined assayed 12.55% and 21.5% citral by method of J. C. Umney. Reported by T. Liberati.

Oil of Neatsfoot.—The rejection of one lot was recommended on account of its high specific gravity and iodine value. Lewkowitsch quotes specific gravities of pure oils ranging from 0.914 to 0.917 at 15° C. and iodine values from 66 to 71. The rejected sample had a specific gravity of 0.9227 and an iodine value of 91.9. It also had a higher congealing point than is usually found for Neatsfoot Oil as other samples examined ranged from 22° F. to 42° F. This sample congealed at 50° F. Reported by J. G. Roberts.

Oil Wormseed.—One lot was adulterated with 44% of a fixed oil. Oil Wormseed ordinarily averages 1.5% non-volatile residue. Reported by G. E'We.

Oxgall, Powd.—None of the Powd. Oxgall examined this past year contained starch; a decided improvement in this product. Reported by W. H. Orrick.

Petrolatum (Liquid)—Owing to the shortage of supply from European sources a fine grade of medicinal mineral oil of American origin has been placed on the market. It complies with the requirements of the U. S. P. with the exception of specific gravity, which has ranged from about 0.835 to 0.853. Reported by J. G. Roberts.

The Russian variety being practically unobtainable, resource must be had to oil from other sources. These oils are difficult to obtain free from kerosene taste and fluorescence and are much lower in specific gravity than desirable. Reported by G. E'We.

Quinine Alkaloid.—Extreme variation in water content of this alkaloid is still noted. The nine lots examined contained 0.0, 7.3, 9.3, 11.3, 12.5, 12.7, 13.0, 15.1 and 20.0 percent water, respectively. The U. S. P. allows 14.3 percent. Reported by N. Saito.

Resin Jalap.—One lot was not completely soluble in five times its weight of ammonia water. Reported by W. H. Orrick.

Resin Scammony.—Sample did not comply with the U. S. P. ether and turpentine solubility requirements and did not give satisfactory results with the sulphuric acid identity test. According to the U. S. P., Resin Scammony should be completely soluble in turpentine and almost completely soluble in ether. We have never examined a sample that was wholly soluble in turpentine but have had several that were almost completely soluble in ether.

The ether solubility test is a strong indication of the purity of Resin Scammony as the spurious varieties are not nearly so soluble as the genuine U. S. P. variety which is not less than 95% soluble in ether. As the sample submitted for examination yielded only 68.2% of ether soluble material it was considered to have been obtained from one of the spurious varieties. Reported by J. G. Roberts.

Sanguinaria.—The following amounts of alkaloid were obtained from the four lots examined: 2.88%, 4.09%, 4.7%, 2.86%. Reported by J. G. Roberts.

Sodium Benzoate.—A twenty-barrel lot of generally inferior quality was rejected. It had a yellowish color and an undesirable odor. It also contained 4.9% of chloride computed as Sodium Chloride and was only 88% pure. Reported by J. G. Roberts.

Sodium Glycerophosphate (75% Solution).—The following results were obtained on two samples:

	No. 1	No. 2
Reaction of 1-20 solution	Very alkaline	Alkaline
Heavy Metals	None	None
Phosphates	None	None
Alcohol soluble impurities	0.14%	0.17%
Strength as anhydrous Sodium Glycerophosphate	53.63%	59.97%

Neither of the samples comply with the proposed standard of not less than 66%. It is possible, however, that the manufacturers do not calculate on the anhydrous basis as Sodium Glycerophosphate containing 5½ molecules of water is manufactured. Calculating upon this basis, sample No. 1 would be increased to 78.23%, and sample No. 2 to 87.46%. Reported by J. G. Roberts.

Sodium Iodide.—One lot assayed 95.2% absolute NaI; the low assay being due to moisture. Reported by G. E'We.

Sodium Salicylate.—A 500 lb. lot was rejected on account of being 4% low in strength. Several samples also contained traces of heavy metals, according to the U. S. P. test. Reported by J. G. Roberts.

Two lots were lower than the 99.5% standard, assaying 97.2 and 98.4%, respectively. Reported by L. H. Glickman.

Sodium Sulphite.—The only lot examined was 2.44% low in strength. It also was dark in color and was too alkaline in reaction. Reported by J. G. Roberts.

Spigelia.—An improvement is noted in the quality of Spigelia, as one lot contained only a few foreign roots. The other two lots contained only about one and two percent, respectively, of Ruellia. Reported by J. G. Roberts.

Stramonium Leaves.—Sixteen lots were examined, fourteen of which were of U. S. P. strength. The others contained 0.19% and 0.23%, respectively, of mydriatic alkaloids. Reported by J. G. Roberts.

Stramonium Seed.—Both lots were slightly below standard and yielded 0.28% and 0.29% of mydriatic alkaloids. Reported by J. G. Roberts.

Strontium Peroxide.—One lot assayed only 69.2% absolute SrO_2, which is below the 84.5% stated by the N. & N. R. for a good product. Reported by N. Saito.

Terra Alba.—The trade still differs as to what the composition of Terra Alba should be. Most of the lots examined were Calcium Sulphate, but one lot was clay, another lot was clay with much calcium sulphate and another lot was clay with a little calcium sulphate. Reported by G. E'We.

Thyroid Glands (Powdered).—The following amounts of iodine were found in several lots examined: 0.029%, 0.0585%, 0.044%, 0.065%, 0.18% and 0.19%. It can be readily seen that the last two are the only lots that will meet the iodine standard of 0.17% to 0.23% proposed for the next U. S. P. Reported by J. G. Roberts.

Pinus Maritima.—A steam distillation of this substance yielded about 10% of an oil having

an optical rotation of —30° 31′ and a specific gravity of 0.868 at 25° C. Reported by J. G. Roberts.

Wild Cherry Bark.—About 50% of old reddish-brown undesirable bark was found in one lot. Reported by J. G. Roberts.

Zinc Oxide.—Three lots which complied with all the U. S. P. requirements contained 0.21%, 0.275% and 0.196% of lead calculated as lead oxide. Reported by J. G. Roberts.

The following table shows the results of 133 crude drug assays made in the Analytical Laboratory of the H. K. Mulford Co. during the year June 1, 1914, to June 1, 1915:

DRUG	No. of Samples	Lowest Assay	Highest Assay	Average	Standard	No. Above Standard	No. Below Standard
Aconite Leaves	1	0.355	0.355	0.355	0.2% ether soluble alkaloids	1	0
Aconite Root	5	0.360	0.625	0.497	0.5% ether soluble alkaloids	2	3
Belladonna Leaves	3	0.247	0.350	0.300	0.3% mydriatic alloids	2	1
Belladonna Root	7	0.424	0.640	0.511	0.45% mydriatic alloids	5	2
Cantharides, Chinese	6	0.570	1.10	0.869	0.6% cantharidin	5	1
Cantharides, Russian	1	0.625	0.625	0.625	0.6% cantharidin	1	0
Capsicum	6	13.85	20.84	16.65	10% oleoresin	6	0
Cinchona, Red	1	8.35	8.35	8.35	5% total anhydrous alkaloids	1	0
Cinchona, Yellow	10	6.50	11.00	8.56	5% total anhydrous alkaloids	10	0
Coca Leaves	1	1.053	1.053	1.053	0.5% ether soluble alkaloids	1	0
Colchicum Seed	3	0.660	0.850	0.780	0.45% colchicine	3	0
Digitalis	2	0.293	0.365	0.329	0.25% digitoxin	2	0
Ergot	6	0.115	0.380	0.256	0.15% cornutine	4	2
Gelsemium	4	0.503	0.849	0.630	0.4 alkaloids	4	0
Ginger, African	2	7.99	8.90	8.44	6% oleoresin	2	0
Ginger, Jamaica	1	3.93	3.93	3.93	4% oleoresin	0	1
Hydrastis	5	3.16	3.98	3.63	2.5% hydrastine	5	0
Hyoscyamus	20	0.031	0.140	0.073	0.08% mydriatic alkaloids	6	14
Ipecac, Powdered	3	1.666	2.130	1.872	1.75% alkaloids	2	1
Ipecac, Whole	6	1.846	2.380	2.221	1.75% alkaloids	6	0
Jalap	1	7.17	7.17	7.17	7% total resin	1	0
Kola Nut, Dried	10	1.40	2.02	1.582	1% alkaloids	10	0
Lobelia	1	0.591	0.591	0.591	0.5% alkaloids	1	0
Nux Vomica	7	0.705	1.328	1.013	1.25% strychnine	2	5
Opium Gum	9	11.31	12.35	11.74	9% cryst. morphine	9	0
Opium Powd.	6	11.84	12.58	12.11	12%-12.5% cryst. morphine	3	3
Pilocarpus	1	1.06	1.06	1.06	0.5% alkaloids	1	0
Quebracho	2	0.95	1.22	1.08	1% alkaloids	1	1
Sanguinaria	1	3.98	3.98	3.98	2.5% alkaloids	1	0
Stramonium Leaves	1	0.219	0.219	0.219	0.25% mydriatic alkaloids	0	1
Veratrum	1	1.32	1.32	1.32	1% alkaloids	1	0
Totals	133					98	35

Comparison with reports sent in previously:

Year	Total	Above	Below	Percent Above
1909	395	313	82	79.3
1910	340	291	49	85.6
1911	263	224	39	85.1
1912	298	235	63	78.8
1913	382	264	118	69.1
1914	286	221	65	77.2
1915	133	98	35	73.6

Last year the drugs running habitually below standard were Aconite Root, Calabar Bean, Hyoscyamus, Jalap, Mandrake and Nux Vomica.

This year Aconite Root, Hyoscyamus and Nux Vomica are running low.

The Smith, Kline and French Co. found that Hyoscyamus, Nux Vomica and Stramonium Seed were generally below standard.

Respectfully submitted,

COMMITTEE ON DRUG MARKET,
J. G. ROBERTS, Acting Chairman,
CHAS. E. VANDERKLEED,
HENRY C. BLAIR,
D. M. KRAUSER.

SUGGESTIONS FOR A COURSE IN MICRO-ANALYSIS AND BACTERIOLOGY FOR COLLEGES OF PHARMACY.

ALBERT SCHNEIDER.

(Concluded from July.)

The following blank report sheets should be used. The sample reports given will indicate how these are to be filled out based upon the results of the analysis:

Form No. 1. Blank report sheet for the microscopical examination of organic drugs and dry food substances.

No. (I. S. Laboratory or other serial number).

Label

.....

Sample received..... Sample examined.....

Conditions of wrappings and seals.....

Organoleptic tests

Consistency of Feel.....

Color

Odor

Taste

Adjunct Tests

Ash%

Acid-insoluble%

Sand (beaker test).....%

Special Tests

.....

.....

Microscopical Findings

.....

.....

.....

Conclusions
.....
.....
.....
.....
.....Analyst.

The following is a sample report of analysis using the proposed report card:

No.: 5432.

Label: *Broken Senna, U. S. P., John Smith & Co., Kalamazoo, Michigan.*

Sample received: *August* 15, 1912. Sample examined: *August* 20, 1912.

Conditions of wrappings and seals: *Good.*

Organoleptic Tests

Consistency or Feel: *Dry, gritty, sandy, dirty.*

Color: *Not unusual.*

Odor: *Senna-like.*

Taste: *Sandy, gritty.*

Adjunct Tests

Ash: 19.6%.

Acid-insoluble: 9.4%.

Sand (beaker test): 9%, *sand and small pebbles.*

Special Tests: *Pebbles picked out by hand. About 4% senna seeds and pod fragments and stems present.*

Microscopical Findings: *The histological characters of African senna. Stem tissue excessive. Sand and dirt excessive. Senna seeds and pods present in considerable quantity.*

Conclusions: *Adulterated with sand, pebbles, senna seeds, senna pods and stems 25%. Misbranded because labeled U. S. P., whereas it is below the U. S. P. standard.*

RICHARD ROE, Analyst.

Form No. 11. Blank report sheet for the microscopical examination of catsups, jams, jellies, etc.:

(No., label, dates, condition of seal and organoleptic tests, as for Form No. 1.)

Adjunct Tests.

Sublimation tests for.....

Benzoic acid

Salicylic acid

Boric acid (curcuma thread).....

Iodine reaction

Intracellular

Extracellular

Special Tests
.....

Microscopical Findings.

General
.....
.....

Cytometric counts.

Dead yeast cells.....per cc.

Living yeast cells.....per cc.

Bacteria per cc.

Mold (hyphal fragments and clusters).....per cc.

Mold spores per cc.

Conclusions
.....
.....
.....Analyst.

We may give an example of a report as follows:

FORM NO. II.

Lab. No. 462.
Label: *Pure currant jelly. Made by Smith, Jones & Co., Nantucket, Wis.*
Sample received *August* 5, 1914. Sample examined *August* 5, 1914.
Condition of seals: *Good, unbroken sample.*
Organoleptic tests: *Not conclusive.*
Consistency or feel: *Poorly jellied.*
Color: *Normal for Currant jelly.*
Odor: *Faint, somewhat disagreeable.*
Taste: *Not characteristic, bitterish, quite acid.*
Adjunct tests.
Sublimation tests for
Benzoic acid: *Negative.*
Salicylic acid: *Very marked.*
Boric acid (curcuma thread): *Negative.*
Iodine reaction: *Very marked.*
Intracellular: *Negative.*
Extracellular: *Positive, very marked.*
Special tests: *Salicylic acid color reaction, with ferric chloride very marked.*
Microscopical examination.
General. *Some apple tissue (window cells and pulp cells) and currant tissue sclerenchyma present. Added wheat starch about 5 percent.*
Cytometric counts.
Dead yeast cells, 80,000,000.....per cc.
Living yeast cells, *none*.....per cc.
Bacteria, 600,000,000 per cc.
Mold (hyphal fragments and clusters), 84,000.....per cc.
Mold spores, 5,000,000.....per cc.
Smut spores, *none*.....per cc.
Conclusions: *Misbranded. Adulterated with apple and with wheat starch and made from fermented and decomposed material, preserved with salicylic acid. Not fit for human consumption because of the quantity of yeast, mold and bacteria present.*

JOHN DOE, Analyst.

Part II. Bacteriological.—Quantitative and Qualitative Determinations of Organisms in Foods and Drugs.

A laboratory course of at least one hour each day extending throughout the entire college year. The time necessary to do the laboratory work will vary from day to day. The work is to be supplemented by lectures, special reading and seminar work. The laboratory methods employed are those of the Laboratory Section of the American Public Health Association, The U. S. Public Health Service and the Bureau of Chemistry of the U. S. Department of Agriculture, in-so-far as these methods are applicable.

I. Substances to be analyzed.
1. Liquids of all kinds.
2. Semiliquids and semisolids miscible with water.
3. Solids of all kinds.

II. Numerical and quantitative limits of contamination in different substances.
1. For molds—quantity of spores and hyphæ.
2. For yeasts—number and kind.
3. For bacteria—number and kind.
4. For pus, dirt, sand, etc.

III. Methods.
1. Making concentrations.
2. Making dilutions.
3. Making the counts and estimates.
 a. Bacteria.
 b. Yeasts.
 c. Mold spores and mold hyphæ.
 d. Algæ, in drinking waters, etc.
 e. Protozoa.
 f. Pus cells, in milk, etc.
 g. Dirt, sand, etc.
4. Plate counts—Petri dish cultures.
 a. Culture media used.
 b. Optimum temperature.
 c. Time of incubation.

IV. Qualitative determinations.
1. Apparatus.
2. Culture media.
3. Stains.
4. Special methods.
 a. Colon group of bacilli.
 b. Presumptive colon bacillus test.
 c. Sewage streptococci.
 d. Dysentery bacilli and amoebæ.
 e. Bacillus typhosus.
 f. Paratyphoid group.
 g. Cholera vibrio.
 h. Yeasts.
 i. Molds.
 j. Animal parasites.
 k. Larvæ, ovæ, etc.

V. Biological water analysis.
1. Bacteria, number and kind.
2. Diatoms.
3. Desmids.
4. Nostoc.
5. Other algæ.
6. Molds; significance of.
7. Evidence of soil and sewage contamination.

VI. Bacteriological milk analysis.
1. Quantitative.
 a. Standards for different geographic areas.
 b. Summer and winter standards—temperature standards.
2. Qualitative.
3. Pus and blood corpuscles; significance of.
4. Milk diseases.
 a. Blue milk.
 b. Ropy milk
 c. Bad odors, bad taste, etc.
5. Sour milk.
6. "Buttermilk" tablets.
7. Kefir, koumys, etc.

VII. Bacteriological Examination of Shellfish.
1. Selection of sample.
2. Making a record of the sample.
3. Transportation of the sample.
4. Laboratory procedure.
5. Bacterial counts.
6. Determining bacteria of the colon bacillus group.
7. Statement of results. Rating.

VIII. The Bacteriological and Toxicological Examination of Meat and Meat Products.
1. Direct microscopical examination of meats.
 a. Bacteria on the surface of meats.
 b. Mold and mold spores, as in moldy bacon, pork, fish, etc.
 c. Presence of bladder worm, larvæ of parasites, etc.
 d. Trichinæ in pork and examination for trichinæ.
 e. Cereal fillers and starches in sausage meats.
 f. Preservatives and coloring substances in meats.
2. Plate cultures.
 a. Numerical counts of bacteria.
 b. Number of gas formers and of acid formers.
 c. Bacillus botulinus in pork. Botulism.
3. Toxicological tests.
 a. Inoculation tests (Guinea pigs) to prove the absence or presence of toxins or ptomaines.
 b. Tests for tuberculous meats and for the tubercle bacillus.
4. Biological Tests. Determining the Source of the Meat.
 a. Sugar test for horse meat.
 b. The precipitin test for meats from different animals.
 c. Microscopical examination of tissues, fats, fat crystals, etc.

IX. The Bacteriological Examination of Eggs and Egg Products.
1. Direct microscopical examination.
 a. Bacteria.
 b. Molds.
 c. Mold spores.
2. Plating methods.
3. Egg tests.
 a. Candling.
 b. Brine test.
 c. Organoleptic tests, etc.
4. Evaporated eggs.
5. Cold storage eggs, etc.

X. Bacteriological Examination of Pharmaceutical Products.
1. Direct microscopical examination.
 a. Bacteria.
 b. Molds.
 c. Mold spores.
 e. Yeasts.
2. Plating methods.
3. Colon bacillus test
4. Tetanus bacillus test.
5. Tests for the staphylococcus and streptococcus groups.

XI. The Microscopical and Bacteriological Examination of Syrups.
1. Medicinal syrups.
 a. Official, simple and medicated.
 b. Patent and proprietary medicated syrups.
 c. Medicinal preparations containing syrup.
2. Soda fountain syrups.
3. Fruit juices containing sugar. Fruit juice concentrates.
4. Syrups, molasses, treacle, corn syrup, etc.

XII. The Microscopical and Bacteriological Examination of Fermented Foods and Drinks.
1. Whisky and brandy.
2. Beer. Beer diseases.
3. Wines. Wine diseases.
4. Other fermented drinks.
 a. Sake or Japanese rice wine.
 b. Arrak.
 c. Yoghurt.
 d. Kephir.
 e. Koumiss.
 f. Soja sauce.
 g. Mazun.
 h. Leban.
 i. Ginger beer.
 j. Beebe wine.

XIII. The Bacteriological Examination of Mineral Waters.
1. Examination of centrifugalized sediments.
2. Plating methods.
3. Presumptive colon bacillus test.

XIV. Determining the Efficiency Value of Disinfectants.
1. Phenol germ destroying coefficient.
2. Toxic Coefficient.
3. Albumen coagulating coefficient.
4. Comparative cost.

XV. Determining the Purity and Quality of Sera, Bacterins and of Related Products.
1. Purity and freedom from bacteriological contamination.
2. The purity of smallpox vaccines.
3. Purity of bacterial vaccines.

XVI. Special Biological and Toxicological Tests.
1. Arsenic in foods. Biological test for arsenic.
2. Toxicity tests with defibrinated blood.
 a. Toxalbumins and toxins.
 b. Saponins.
 c. Chemical hemolysis.
3. Frog tests for the presence of alkaloids.

The following report blank will be found useful in making reports of bacteriological examinations. In many instances however, it will be found necessary to supplement the report or to make a special report.

Form No. III.

Bacteriological Examination.

(No., label, dates, condition of seals as for Form I.)

I. Direct count. (Thoma-Zeiss hemacytometer with Turck ruling.)
1. Bacilli per cc.....
2. Cocci per cc.....

II. Plate and tube cultures. (Lactose-litmus-agar.)
1. Temperature differential test.
a. (20° C.) colonies per cc.....
b. (38° C.) colonies per cc.....
2. Color differential test.
a. Pink or yellow colonies per cc.....
b. Not pink or yellow colonies per cc.....
3. Gelatine liquefying colonies per cc.....
4. Indol reaction (±).....
5. Neutral red reduction (±).....
6. Gas (hydrogen) formula.....
7. Gram-stain behavior (±).....
8. Presumptive colon bacillus test (±),
a. Amounts used
b. Number of tests.....
c. Rating

III. Special tests
.....
.....

IV. Conclusions
.....
.....

.....Analyst.

WHITE MINERAL OILS, AMERICAN—PARAFFINUM LIQUIDUM—LIQUID PETROLATUM.

S. L. HILTON.

White Mineral Oils, or Paraffinum Liquidum, U. S. P. now on the American market are of American refining, for the reason that the Russian oils are unobtainable owing to various causes incident to the European War. A fact, not generally known, was that while these oils were made from crude material obtained in the Baku district they were not refined there and the processes of refining are held secret.

The Russian crude product differs chemically from that found in America, consequently, it has been necessary to devise and develop new processes that were applicable to refining and purifying the crude American product so as to be able to furnish an oil of similar character as the Russian, for internal administration, that would give equally as good results in intestinal stasis.

The requirements of the British Pharmacopoeia are more exacting than required by the U. S. P. VIII. No doubt the U. S. P. IX, when issued, will be as exacting; the standard that I have followed in the examination of these oils is that of the British Pharmacopoeia.

An oil containing an appreciable amount of unsaturated hydrocarbons when taken internally will result in chemical action in the digestive tract, generating gases and having a similar action to that of castor or croton oils, which is not

desired. The work of Dr. Lane was with an oil free from unsaturated hydrocarbons, of a rather heavy specific gravity, so that its action would be mechanical entirely. This is the oil that is desired and the one that has been used abroad and in this country for some time. With the disappearance of the Russian oil from the market, it has become necessary for American refiners to study the question and devise processes to properly purify and refine the American crude product obtainable, of quite a different character, so as to furnish an oil of high purity, free from unsaturated hydrocarbons, that would take the place of the foreign product now unobtainable. This the American refiners seem to have accomplished and they will no doubt further improve their products, after gaining more experience with the processes they have devised for purifying and refining.

An examination of fifteen different samples of American oils now on the market shows varying results, those suitable for internal administration when subjected to a temperature of —4° C. for 4 hours are nearly or quite solid, some of them will show a distinct cloudiness with the slightest change of temperature. Another characteristic of the American oils is that they are generally of lighter specific gravity than the Russian oils, due evidently to the fact that they are obtained from material of a different chemical composition. The Russian oil is obtained from the crude product consisting chiefly of monocylic polymethanes or naphthenes having a general formula C_nH_{2n}. The American crude oil is obtained from paraffin base petroleums and consists chiefly of hydrocarbons of the methane series having the general formula of C_nH_{2n+2}.

Richter makes the statement that paraffins are more abundant in petroleum from the Baku district than that found in America; my observations are to the contrary. In a comparison of experiments I made in February 1914, with those made at this time, I find that the American oils show decidely more heavy paraffins than the Russian oils. I see no reason why this should affect the quality of the American oil or interfere in any way with its use for internal administration, provided they are saturated hydrocarbons. This can be readily determined by applying the sulphuric acid test; the showing of more than a pale brown color, after properly conducting the test as prescribed by the British Pharmacopœia, is sufficient grounds to reject the oil for internal administration.

After completing the examination as shown by the tabulated statement, I placed samples of the oils I considered best, in the hands of several physicians for experimentation and comparison of results they had previously obtained with Russian oils. In every case I have had most favorable reports and they have informed me that they were unable to notice any difference whatever in its action. I have therefore come to the conclusion that our American oils, when properly purified and refined, so that they are free from taste, odor and unsaturated hydrocarbons, that are water-white and with a specific gravity of at least .840 at 15° C., will answer every purpose that is desired and will give equally good results as the Russian oils when taken internally.

I herewith append tabulated statement showing the results obtained. Samples 1, 4, 5, 6, 7, 9, 10, 12, and 15 conform to the requirements of the British Pharmacopoeia, which standard is more rigid than that required by the U. S. P. VIII. These oils are adapted for internal administration.

EXAMINATION OF AMERICAN MINERAL OILS.

(Liquid Petrolatum.)

Sample	I	II	III	IV	V
Color	None	None	None	None	None
Odor	None	None	None	None	None
Taste	None	None	Decided petroleum	None	None
Acidity	Neutral	Neutral	Neutral	Neutral	Neutral
Sp. Gr. at 15 C.	.8436	.8553	.8603	.8561	.8424
Freezing Test	Very opaque solidified	Slightly opaque	Slightly opaque	Slightly opaque	Very opaque solidified
Heating on Platinum	Slight odor	Slight odor	Slight odor	Slight odor	Slight odor
Lead Oxide Test	Nil	Nil	Nil	Nil	Nil
Saponification Test	Nil	Nil	Nil	Nil	Nil
Sulphuric Acid Test	Pale brown	Brown	Dark brown oil colored	Pale brown	Very pale brown

Sample	VI	VII	VIII	IX	X
Color	None	None	Blue fluorescence	None	None
Odor	None	None	None	None	None
Taste	None	None	Decided petroleum	None	None
Acidity	Neutral	Neutral	Neutral	Neutral	Neutral
Sp. Gr. at 15 C.	.8512	.8555	.8647	.8435	.8516
Freezing Test	Opaque solidified	Opaque	Slightly opaque	Opaque solidified	Opaque solidified
Heating on Platinum	Slight odor	Slight odor	Petroleum odor, acrid	Slight petroleum odor	Slight petroleum odor
Lead Oxide Test	Nil	Nil	Nil	Nil	Nil
Saponification Test	Nil	Nil	Nil	Nil	Nil
Sulphuric Acid Test	Very pale brown	Pale brown	Very dark brown, oil layer violet	Pale brown, oil colored	Pale brown

Sample	XI	XII	XIII	XIV	XV
Color	Blue fluorescence	None	None	Blue fluorescence	None
Odor	Slight petroleum	None	Slight petroleum	None	None
Taste	Decided petroleum	None	Petroleum taste	None	None
Acidity	Neutral	Neutral	Neutral	Neutral	Neutral
Sp. Gr. at 15 C.	.8766	.8710	.8615	.8638	.8127
Freezing Test	Slightly opaque	Opaque solidified	Opaque partly solidified	Opaque partly solidified	Opaque partly solidified
Heating on Platinum	Decided petroleum, acrid	Slight odor	Decided petroleum odor	Slight acrid odor	Slight odor
Lead Oxide Test	Nil	Nil	Nil	Nil	Nil
Saponification Test	Nil	Nil	Nil	Nil	Nil
Sulphuric Acid Test	Orange on mixing dark brown, oil violet	Very pale brown	Yellow on mixing, reddish brown, oil violet	Yellow on mixing black, oil layer dark brown	Very pale brown

1. Refiner
2. Dealer.
3. Pharmaceutical House
4. Wholesaler
5. Dealer
6. Dealer
7. Wholesaler
8. Dealer.
9. Wholesaler
10. Refiner.
11. Pharmaceutical Hou
12. Pharmaceutical Hou
13. Dealer
14. Refiner.
15. Wholesaler

LIQUID PETROLATUM*.

JOSEPH P. REMINGTON.

The war in Europe has caused considerable difficulty in obtaining Liquid Petrolatum of the quality suited for internal administration.

The great demand for this liquid has, of course, stimulated American manufacturers of petroleum products to produce an article equal to the "Russian Mineral Oil" as it is called.

It has been stated that the latter, owing to its having been procured from oils of the naphthene series possesses qualities which fit it for internal use, while the American Oil, being obtained from the methane series, cannot be refined so as to produce an article equal to the Russian Oil. Attempts have been made from time to time, during the last few years, in this direction but so far with varying success.

An American Oil is coming into use and undoubtedly a way will be found to solve the problem. The points which at present are dwelt upon are these: Specific gravity, viscosity, freedom from taste, absence of sulphur, and fluorescence.

Specific Gravity.—The question of specific gravity need not be vital. It appears that the oil from American source is of a lower specific gravity than that furnished from the Russian sources. Medical writers on the subject insist upon a heavy oil, but if the other requirements are thoroughly carried out, a wider range of admitting oils of lower specific gravity could be directed by the Pharmacopoeia.

Viscosity.—The degree of viscosity seems to be of more importance than specific gravity. For oils to be used for internal use, a high degree of viscosity is believed to produce an oil which will not cause leakage through the rectum. On the other hand, some medical authorities believe that viscosity has nothing whatever to do with leakage, but that this is due to the patient using an excess. The manufacturers are trying hard to satisfy the requirements for viscosity and some are succeeding.

Freedom from taste is, in the writer's opinion, of the greatest importance, and to produce an oil fully meeting this requirement causes the manufacturer more trouble than anything else. Americans almost universally dislike the taste of coal oil and when the slightest amount of sulphur is present, hydrogen sulphide or similar compounds are produced in the stomach and the disagreeable taste of the eructations renders the product unsalable, and its rotten egg flavor is unbearable.

Fluorescence.—The property which some liquids possess of emitting colors while light is being passed through them, in other words fluorescence, is regarded by dealers as one of the best practical tests to determine a proper degree of refinement. Fluorescent oils are rejected because this quality is believed to indicate lack of purity. Whether a slight fluorescence is a disadvantage medicinally, provided the oil is tasteless, is yet a question to be determined. In the work of revision of the Pharmacopoeia, many samples have been submitted to the writer and the fact stands out prominently that samples of oils of American manufacture have with

* Read at the meeting of the Pennsylvania Pharmaceutical Association, June, 1915.

few exceptions *failed to retain* the properties of tastelessness and freedom from odor. There is also a tendency to become yellowish or yellowish-brown in time. It would seem from some experiments which have been made that exposure to direct sunlight causes discoloration. This is remarkable because exposure to sunlight has been regarded for centuries as inducing a bleaching or decolorizing effect on most substances. At present it would seem that manufacturers of American oil have not entirely mastered the problems of purification.

At present buyers of American Liquid Petrolatum should be cautious about laying in a stock of the Oil in large lots, for they are likely to find that the last portions have acquired properties which will render it unsalable, since the slightest coal oil taste makes it unfit for internal administration.

The writer has faith in the American manufacturers' ability to overcome these defects and the greatest encouragement should be given them to produce an American Oil suitable for all purposes.

The new Pharmacopoeia will cover these points by appropriate tests. The sulphuric acid test to determine the presence of carbonizable impurities; the lead oxide test for sulphur compounds; a test for absence of acidity or alkalinity, and the physical tests to determine the tastelessness and freedom from odor and fluorescence will be given. A light Liquid Petrolatum will also be official for use in atomizers and nebulizers.

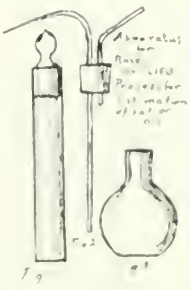
The definition will be changed simply to read, "A mixture of liquid hydrocarbons" as it is unnecessary to specify the source from which it is derived, either the methane or naphthene series.

FATS AND OILS.*

The Adaptability of the Röse-Gottlieb Method for the Estimation of Fat and Oil in Certain Pharmaceutical Preparations.

CHARLES A. HACKMAN, F. I. C.

Judging from statements recorded in past numbers of this journal (Chemist and Druggist), it does not appear to be generally known that the Röse-Gottlieb method affords the most rapid and accurate means for the determination of oil in many pharmaceutical materials and preparations. For example, the estimation of oil in cod-liver oil and malt presents many difficulties when the usual method of extraction with immiscible solvents is attempted; but with the Röse-Gottlieb method, suitably adapted, these difficulties are readily overcome, and the present note has been written with a view to drawing attention to the excellence and wide adaptability of the process. Originally designed by Gottlieb for the estimation of fat in milk (Analyst, 1898, 259), and subsequently modified by Röse, the method was prominently brought before analysts by H. Droop Richmond in "The Analyst" for October, 1908, p. 389. In that communication its suitability for the estimation of fat in dried milks was



* Chemist and Druggist, July 3, 1915.

especially pointed out, and in concluding his paper the author made the following remarks:

"The method is so convenient, accurate, and rapid, that I now use it in preference to all others for the analysis of milk (of which 5 cc. is taken and no water added) and all milk-products; it is also applicable to the analysis of eggs, egg-yolk, and dried egg-preparations, provided the quantities taken are not too large." Continued and extended use of the process for many years enables the writer of this note to confirm the above remarks in every particular, and for the benefit of those who have, perhaps, hitherto regarded the method as applicable only to milk, a detailed description of its working is here appended. The apparatus required is of the simplest description, and consists of Fig. 1, a narrow, accurately stoppered tube, approximately 7 in. high and 1 in. wide; Fig. 2, a cork to fit this tube carrying thin wash-bottle tubes; and Fig. 3, a light glass flask, and (4) a condenser. The reagents used are (1) solution of ammonia (0.880 ammonia diluted with an equal volume of water), (2) absolute alcohol, (3) ether (sp. gr.= 0.720), and (4) petroleum ether (boiling point below 60° C.).

The details of procedure in the case of milk are as follows:

The tube, without its stopper, is first accurately weighed; 5 cc. of the sample is then pipetted in, and the whole weighed again, the difference giving the exact weight taken. Next 0.5 cc. of the ammonia solution is run into the tube, followed by 5.0 cc. of alcohol, and the whole thoroughly mixed. Then 12.5 cc. of ether (measured out in a small cylinder) is added in approximately 5 cc. quantities at a time, holding the tube in the right hand and imparting to it a rotary motion after each addition in order to secure thorough admixture. A similar quantity (12.5 cc) of petroleum ether, measured in the same way, is finally added and mixed. The tube, with the stopper loosely in position, is placed in a water-bath containing lukewarm water and gently rotated until the ether-vapour just commences to escape and condenses around the ground-in portion of the stopper. As soon as this happens the stopper is pushed home, and the tube and its contents are cooled under the tap. After gently inverting once or twice, the tube may either be set aside for the mixed layer to separate, or preferably "whirled" immediately in a centrifuge until this separation is complete.

The stopper is now cautiously withdrawn, and its underside rinsed off into the tube with a few cubic centimeters of mixed ethers contained in a small wash-bottle. The use of the warm-water bath employed above is apparent at this stage, since the slight vacuum produced prevents any of the contents of the tube being ejected—as would otherwise be the case—when the stopper is withdrawn. The cork carrying the wash-bottle tubes is now inserted in the place of the stopper, and the long tube adjusted until it is about one-fourth inch above the line of demarcation of the two liquids. On applying gentle pressure to the shorter tube, either by the mouth or by means of a small pressure-tank provided with a finely acting valve, the whole of the ethereal layer is blown off into the light glass flask. The cork is next carefully removed, the outside of the longer wash-bottle tube rinsed back into the Gottlieb tube, 25 cc. of mixed ethers added, the process described above repeated in exactly the same manner and the separated ethereal layer again blown off into the flask containing the first portion.

In the case of milk two "blow-offs" are sufficient, but in some substances richer in fat or oil three or even four are necessary.

The thin glass flask containing the united ethereal extracts is now attached to a condenser and the mixed ethers are distilled off. After detaching the flask the residual alcoholic and ether is blown off by means of a current of air, and the residue dried to constant weight in the water-oven. The fat is next dissolved in a little petrolatum ether and cautiously decanted from any insoluble residue. After several rinsings to remove the whole of the fat, the flask is again dried and weighed, the difference between the two weighings giving the amount of fat in the weight of sample taken.

In adapting this process to substances other than milk it is important to keep the relative proportions between the water and immiscible solvents constant, and to secure thorough admixture of each reagent. Thus in the case of extract of malt with cod-liver oil a weighed quantity approximating to 1 gram is taken and dissolved in sufficient warm water to occupy 5 cc. The remaining procedure is then as described above. For all emulsions the process will also be found eminently suitable. The estimation of the proportion of cacao-butter in cacao and chocolate is possibly of minor importance to pharmacists, but the Röse-Gottlieb process in the hands of the writer, employed with slight modification in the order of adding the reagents, has proved the quickest and most accurate process for this estimation that is known to him.

LIMITATIONS OF THE REACTION WITH NINHYDRIN.

Current medical literature bears witness to the interest which has attached quite recently to the triketohydrinden reaction, more popularly known by the name of ninhydrin reaction. Until very lately it has been regarded as a characteristic test for amino-acids or compounds of them, and consequently has found a wide application in some of the modern serum reactions, such as those introduced by Abderhalden in relation to pregnancy, cancer, etc. In view of the growing use of the reagent, it deserves to be pointed out that many substances which in no sense exhibit a combination of amino and carboxyl groups, as do the amino-acids and proteins, nevertheless give a characteristic reaction. Amines, amino-aldehyds, aminosulphonic acids, urea derivatives and certain organic acids may be mentioned in illustration of this statement. To these known exceptions Neuberg has added a new series of both organic and inorganic substances, some of which might lead to deception in respect to the reaction. It would be of little advantage to recite here this list of compounds, which the specialist in this field should learn at first hand. Perhaps it is worthy of mention, however, that a minimal putrefactive change in proteins is sufficient to provoke the appearance of substances which give a strongly positive test with the ninhydrin reagent. They are presumably putrefactive bases which are in part of a volatile nature. These facts point to the necessity of caution in the interpretation of findings based on the use of the ninhydrin test.—*Journal A. M. A.*

ETHICS OF BUSINESS.*

With the rapid mode of transportation, with the advanced system of communication, with the improved methods of manufacture, with the many labor-saving inventions, business is making head.

By keeping pace with the scientific achievements of the times, business has demonstrated that it is not a theory. It is a reality built upon efficiency, intelligence and enthusiasm.

In former years, the young man who was not fitted for a profession was usually placed in business. Today this has changed, for this is an age of method and concentrated energy. And unless he is especially trained for the work, he is doomed to disappointment and failure. He must know one thing and know it absolutely, if he is to meet with material success and commercial supremacy. He must have the faculty of concentration. He must give prompt, active and constant service. He must handle his day's complex work on a schedule as exact as a railroad time-table. Enthusiasm and initiative are essential to success. Initiative requires alertness and originality. It is creative and constructive. Enthusiasm is the inspiration, the force, the propelling motor that pumps life into every successful business.

Business must have facts instead of fiction, figures instead of guesses, information instead of experiments, results instead of speculations. Big business is run and financed upon positive information, by detailed records, by charts and statistics. It is governed entirely from tabulated sheets; its judgments are formed by the rule of percentage; its opinions are based upon figures and facts; operations are planned by units and volumes. Commercial leaders think and act in dollars and cents. Nothing is left to luck or chance.

The most successful careers are those that are shaped by their own hands, that are run on conservative lines, and maintained by cautious and prudent principles. This is the method most highly regarded by the business world today. Business cannot be negative. It must be either a success or a failure.

All of us are more or less dependent upon our neighbors for existence. In the beginning men with rudely-formed weapons issued from their caves to kill the wild beasts of the forest. These were to supply them with food and clothing. But as time went on, certain people were able to kill more than others, while some became more proficient in curing skins and pelts. Thus exchange became necessary, and trade was born.

INTERDEPENDENCY.

Today it is not possible for a nation or even an individual to be independent, because the materials from which the necessaries of life are made, come from widely separated sections and countries. Hence came the necessity of railroads and steamships. These are the agencies of commerce. Through these channels we secure food, clothing and shelter. These are the primal wants of man. As civilization advances, nations become more and more dependent upon one another. Consequently, commerce becomes one of the greatest factors in modern business.

* Parts of an article by Isaac Schnewind in The Fra, March, 1915.

The one great curse of business is overproduction. The tendencies are to push business to its utmost limit and then try to find a market for the increased production. Manufacturers have gone on expanding until the markets have become overstocked. Then comes the unloading—the bottom falls out, and the crash is heard in all parts of the industrial world. Long ago business men recognized that the world is a large community, and causes and effects in one country will find their reflex in all others. Thus we see that those who till the soil find that the price of their product is fixed in the world markets.

ORGANIZATION.

The tendency of modern business is towards organization and economy. In hundreds of industries the profits of today are wrung from the waste and the refuse of former days.

Business to be successful must have normal profits. Continuous sacrificing of profits ultimately means failure. When the supply and demand are equalized, then business will be done at a profit. The safe and sound method shows that decreased business with normal profits is better than increased business with no profits. The foreigner realizes this. He first looks to profit. If he cannot obtain it in one market he seeks it in another. This is the chief reason why English and German manufacturers have done business in every market of the world. But most of our concerns go on wondering and blundering.

Competition, which is the desire to excel, is universal. In every sphere of human activity, competition is essential for securing the best results. Formerly competition was the life of trade—today competition is the death of trade. Competition solely of price and not quality is "cut-throat" competition. But in the public mind the fierce price competition is still the basis of industrial progress.

In many branches of trade it has been war to the knife, until some of the biggest and strongest concerns have fallen by the wayside. By unfair competition an irreparable damage is done to the textile industry, by the so-called "world-beaters." This is an article sold so cheaply that no competitor is supposed to meet the price. But this very act forces other houses to make unwarranted concessions, and in the end shows a loss to all concerned. When competition forces the price below the cost of production, it becomes destructive. Competition became fatal when machines were invented whereby production exceeded the immediate demand. We need look only into the large number of retirements from business to understand what such competition means.

CO-OPERATIVE COMPETITION.

Business transactions should be profitable to both buyer and seller. And this condition would exist if we cease this unfair competition which prevails in America.

Co-operative competition should be the motto of every business man. Co-operation on the "live and let live" plan will be the sensible policy of the future. Foolish men compete—wise men co-operate.

To be successful one must be his own chemist and analyze his own case. He must eliminate negative factors; he must sift, sort and strengthen his men and methods. For when business dies the nations perish. Greece started her down-

ward course when she began giving her subjects something for nothing. A pension was devised for every citizen, but the nation became bankrupt. Rome had the same policy. She gave free shows, free entertainments and finally free bread. Then Rome fell.

"Profit-sharing limited to the sharing of profits of successful years, without any responsibilities for the losses of unsuccessful years, is certainly unfair." The system that couples responsibilities with liabilities is more equitable. Unrest in industry is worldwide and is caused by a desire for better conditions. The progressive man constantly works for human betterment. He is always building, extending, improving. Unrest is the sign of progress. Better food, better health, better clothing, better housing and better education is the cry of civilization.

Plato says, "The origin of wars is the pursuit of wealth, and we are forced to pursue wealth because we live in slavery of what wealth buys."Money is only the measure of power. Money for its own sake is not worth the struggle. When money minimizes brains, when it makes men feel that they can buy their way through, when money is the beginning and end of everything, then it nullifies the human element, and sooner or later the stoutest ship must go under.

A NEW IMMUNIZATION THEORY.

According to a new theory of immunization against bacterial disease evolved by Drs. Henry Smith Williams and James Wallace Beveridge, two New York physicians, the red and white corpuscles of the blood are the chief agents that protect human organisms against the ravages of bacteria, and this they have termed the proteomorphic theory. These investigators believe that the white corpuscles deal with the unbroken proteins that they may come in contact with, whether they be of bacterial or dietetic origin, and that the red corpuscles deal with the partially cleaved molecules of protein. In other words, the business of the white corpuscle is to break down or cleave this protein molecule, not synthesize it. And in summing up *American Medicine* condenses their statement: "In this view, then, the red blood corpuscles have an immunizing function strictly complementary to that of the white blood corpuscles, and no less important. One legion of cells co-operates with the other, each having its own special field. The white corpuscle deals with all formed bodies and full-sized protein molecules of foreign type that make their way into the blood stream. The red blood corpuscle deals with the latter cleavage products of protoplasmic activity. In carrying out their respective tasks, the leucocyte supplements the work of the ferments of the digestive tract; the red corpuscle supplments the work of the leucocyte and relieves the ultimate tissues in considerable measure of the task of protecting themselves against small-moleculed nitrogen products that might prove harmful."—*Journal A. M. A.*

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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If the request is made at the time copy is submitted, authors will be furnished reprints by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

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Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

THREE DECEASED PHARMACISTS WHO CONTRIBUTED TO THE HISTORY OF AMERICAN PHARMACY.

F. W. Meissner, of LaPorte, Ind., has donated two photo postal cards to the Historical Section of the A. Ph. A. One of Leo



Leo Eliel, Charles E. Dohme—Dr. F. Hoffman.

Eliel at work, and the other conveying greetings and a message to him from Fr. Hoffmann and Charles E. Dohme.

The card was dated May 17, 1902, at Wiesbaden, and expresses the wish that both of these beloved and distinguished pharmacists would attend the meeting in Philadelphia that year. Health prohibited the attendance of Dr. Hoffmann, but he sent his valuable address, prepared for the semi-centennial meeting entitled, "A Retrospect of the Development of American Pharmacy and the American Pharmaceutical Association."

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GLUE FOR GAS TUBING.

In Germany solidified glue is now manufactured into tubing, substituting rubber. The Technische Monatshefte of April 10th, states that for some purposes this tubing is superior to rubber, more impervious to gases and more resistant to heat. It is claimed that this material will not deteriorate as quickly as rubber and when suitably encased will withstand a high pressure.

The cost is given at sixty pfennigs per meter and is sold under the trade name of Sonjatin. Professor J. Trube is the inventor and he makes the statement that this new composition is peculiarly suited for conductors of petroleum and gasoline as well as gases, but is attacked by water. The latter fact presents an objection and limits the use of the product

"THE DRUGGIST AND HIS PROFITS."

Harry B. Mason, Editor of "The Bulletin of Pharmacy," has for quite a number of years made a close and intimate study of drug-store profits and has just published a book entitled, "The Druggist and His Profits," which deals with that very important part of the business.

The scientific study of the details of business has contributed to the modern store service. To compound a preparation is one thing, but to understand the chemistry involved, is another. So also in business, an intelligent understanding is necessary in order to anticipate profits or conduct it so that there is no uncertainty of results. The haphazard way of doing business, simply selling goods, is unscientific; in a successful business, a knowledge is required of the relation that obtains between the expense account and the volume of sales.

The book is interestingly written and goes into the details of business conduct without beclouding the scheme with unnecessary phraseology and impractical theories. In its fifteen chapters the production of profits is viewed from every angle and the subjects are discussed in a thorough, business-like manner. The lessons are taken from life, in other words, active businesses are analyzed; the methods presented are not presumptive, nor the remedies advised empirical.

It is unnecessary to say that there is no subject that confronts druggists or any other business men which has a greater importance than that of producing profits; hence in this work Mr. Mason has done a service which will doubtless be appreciated. E. G. E.

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New and Nonofficial Remedies, 1915, Containing Descriptions of the Articles which have been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association prior to January 1, 1915. Chicago, 1915.

As suggested by the title this book contains more or less comprehensive descriptions of the composition, dosage, action and uses of and tests and requirements for the new and nonofficial remedies which have been examined by the Council on Pharmacy and Chemistry of the American Medical Association and which appear to comply with the rules of the Council. In submitting this publication the Council again emphasizes its desire to have physicians and pharmacists understand that acceptance of an article does not necessarily mean a recommendation, but that so far as known the article complies with the requirements of the rules of the Council as printed in the introductory portion of the book. The Council also asks for criticisms and corrections to aid in the annual revision of the material contained in this volume. The present edition includes a total of 426 pages and XVI octavo pages and the material in a general way follows the precedent that has been established in previous volumes. The practice of classifying the several articles under general headings has been considerably elaborated on, a large number of new headings being included and some of the headings previously used extended so as to make them more useful for reference. In addition to the descriptions of new and nonofficial remedies, the book contains a reprint of the rules covering the admission of proprietary articles to the book, New and Nonofficial Remedies, with comments thereon, a general index of 34 pages, an index to manufacturers of products included in the book and a list of references to proprietary and unofficial remedies, not admitted to N. N. R. Altogether the book represents a volume of useful information that the up-to-date pharmacist or the wide-awake pharmaceutical chemist cannot well do without. M. I. W.

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Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1914, with the Comments that have appeared in the Journal. Press of the American Medical Association, Chicago, 1915.

This small octavo volume of 143 pages includes a collection of the reports of the Council on Pharmacy and Chemistry of the American Medical Association that have appeared during the year in the Journal of that Association, elaborated in some instances by the addition of records of analytical work or of other laboratory investigations which because of their technical nature had been omitted from the reports as published in the Journal. The complete reports are published so as to make the investigations available to chemists, pharmacologists and scientists in general who might be interested in medicine or who may have occasion to further investigate the

preparations or problems under discussion. In addition to critical reports on widely advertised proprietary preparations, this volume also contains a report on liquid petrolatum or Russian mineral oil and references to a number of products that have been deleted from N. N. R. because of non-use or because the product is no longer marketed by the original manufacturer. As a report of progress and as a book of reference to investigations bearing on the use of proprietary medicines this volume will be a welcome addition to the reference book shelf of the active pharmacist or chemist. M. I. W.

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Annual Report of the Chemical Laboratory of the American Medical Association, January-December, 1914. Press of the American Medical Association, Chicago.

The reports included in this volume are given under three headings: (1) reports of contributions, (2) abstracts of reports, (3) reports not previously published. The object of the publication is to furnish to chemists, and to others who may be interested in drug analyses, readily available references as to work done in the chemical laboratory of the American Medical Association. The report includes a number of analyses of preparations of the "patent medicine type." Among the methods of analyses that should be of more than passing interest is a contribution by L. E. Warren on "The Detection of Emodin-bearing Drugs in the Presence of Phenolphthalein." This latter contribution is particularly interesting at the present time because of the number of preparations containing phenolphthalein that are being marketed usually without any suggestion that this particular product is present. M. I. W.

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THE HOMOGRADE THERMOMETER.

A new clinical thermometer scale is advocated and now in use, the thermometer being known as the "Homograde." The normal temperature is given at 100, but the measurement of the expansion or contraction is fixed by the Fahrenheit scale. Thus instead of one degree of temperature being indicated by 99.6, it is read on the new scale as 101. Doubtless this is a decided improvement, but why not adopt 0 degree as normal. Conversion can then at once be made by adding or deducting the degree indicated, thus a degree below normal which is minus 1 would correspond to 97.6 F. or plus 2 degrees to 101.6. To convert Homograde degrees to Fahrenheit requires that one-third be taken of that number and deducted from the degree Homograde and then 32 added. While easy enough it requires figuring. Thus deduct from 100 degrees Homograde 33 1/3 leaves 66 2/3, add 32 gives 98 2/3. If 0 degree is used as normal then the figures would at once give the temperature above or below normal. Carrying the thought through, the 100 degree of the Homograde might, on account of long custom, unthinkingly be taken to indicate 1.4 degrees of temperature, while such error would not obtain in the suggested scale.

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THE HANBURY MEDALIST OF 1915.



Edward Morell Holmes, F. L. S., has been awarded the Hanbury Medal this year for high excellence in the prosecution of original research in the natural history of drugs. The jury of award were the Presidents of the Linnæan, Chemical and Pharmaceutical Societies of the British Pharmaceutical Conference and Mr. E. H. Farr.

The Hanbury Medalist was born at Wendover, England, in 1843, and at the age of 72 is still intensely active. In 1897 Mr. Holmes was awarded the Flueckiger Medal. By the expressed wish of the late Sir Thomas Hanbury, Mr. Holmes was asked to select for the Pharmaceutical Society Herbarium any or all plants of medicinal interest from the large Botanical Herbarium left by Daniel Hanbury; these he has catalogued for the Society.

Mr. Holmes has taken a great deal of interest in Chinese and Japanese drugs, procuring for the British Pharmaceutical Society specimens of the drugs of these countries from International Exhibitions. That the subject of this very brief sketch is a persistent worker is conclusive from a statement he has made, that it took him twenty years to fix the exact botanical source of genuine jaborandi and after the same length of time, definitely identified the plants yielding myrrh and Japanese aconite root. For

the last two British Pharmacopœias he has been the botanical referee, co-operating with the director of the Kew Gardens.

Mr. Holmes has always taken an active interest in pharmaceutical progress both from the commercial as well as scientific standpoint, and his thorough familiarity with the subject is substantiated by his article on Pharmacy in the Encyclopedia Britannica.

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PROCESS OF TOUGHENING ORDINARY FILTER PAPER.

There has been some difficulty in obtaining hardened filter paper. Wm. R. Rankin, after experimenting with various treatments, finds that the following will give good results:

Good filter paper is dipped in nitric acid sp. gr. 1.42, drained quickly and then placed in running water to remove most of the acid; then dipped in .5 percent ammonia water to completely neutralize all acid. The paper is next washed in running water and partially dried between blotting paper, and finally in a water oven at 100° C.; when dry, the paper is again subjected to the same process. In the treatment of the paper precaution must be exercised, as the cellulose of the paper has been nitrated, and if the temperature in drying the paper is too high, it is apt to char suddenly. The shrinkage of the paper amounts to about ten percent.

The paper so treated, has a hard, smooth surface and will permit a liquid to pass through very quickly, when used for filtration.

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CAROLINA JOURNAL OF PHARMACY.

Number 1, Volume I, of the Carolina Journal of Pharmacy has come from the press and from now on is to be issued quarterly. Prof. J. G. Beard is the editor and the Journal is published by the William Simpson Pharmaceutical Society of the University of North Carolina School of Pharmacy. A cut of William Simpson, forty-second President of the American Pharmaceutical Association, adorns the front page. The first number would indicate that the purpose is not only for developing greater interest among local pharmacists, but to be of general service to pharmacy, so the American Pharmaceutical Association is not overlooked and pharmacists of the state are urged to affiliate. A number of interesting and valuable articles are included in this issue, together with items of more or less local interest. The publication is deserving of encouragement by North Carolina pharmacists, whose support is more particularly solicited.

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HYOSCYAMUS OF THE ANNUAL AND BIENNIAL.

The British Pharmacopœia fails to state whether hyoscyamus leaves of the annual or biennial should be employed. The definition given is for leaves of Hyoscyamus niger, collected from the flowering plants and dried. Tincture of hyoscyamus prepared from biennial leaves makes an opalescent or slightly milky solution with water while that of the annual makes a clear solution. A tincture prepared from official drug, according to definition may not always appear as the same preparation to the patient. E. M. Holmes points out the difference that may obtain, not only in the preparation, but with the drug of the market.

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RANCIDITY OF FATS.

Prof. Henry L. Smith contributes an article on Rancidity of Fats to the Pharmaceutical Journal and Pharmacist of July 3. While rancidity of fats is usually accompanied by increased acidity, there is no definite relation between acidity and the degree of rancidity. Conditions which conduce hydrolytic action also favor rancidity, which is generally caused by oxidation. Fats should be as free from moisture as possible, be protected from light and the influence of air, but this does not insure protection, as small amounts of impurities which may exist in the fat, by becoming oxidized, contribute to the rancid odor. Professor Smith suggests the use of sodium silicate for removing free acids from fats.

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THE DOCTOR'S ORDERS.

She was the sort of woman who always tells everybody her business. With a cheery smile she settled herself at the counter of the hosier's shop and began:

"My husband has just been very ill—very ill indeed. So I have to do his shopping, and I want a shirt."

"Certainly, Madam," said the assistant courteously. "Stiff front and cuffs?"

"Oh, no!" she exclaimed in horrified tones. "The doctor says he must avoid anything with starch in it!"

Necrology

DR. JOHN B. BOND.

Dr. John B. Bond, nestor in pharmacy of Arkansas, died July 16, 1915, at the home of his daughter, Mrs. H. S. Hollis, in Warren, Arizona. His body was brought back to Little Rock, Ark., for burial. Mrs. Bond, who shared with him the joys and sorrows of a well-spent life, survives the deceased.

A sketch of Dr. Bond appeared in the January number of this Journal. He was



born November 15, 1836, at Gettysburg, Pa. Soon thereafter his parents came to Missouri, where the son was educated and grew to manhood. During the war between the states, Dr. Bond was chief surgeon of Little's Division, Price's Corps, and later medical purveyor on the staff of General Holmes and assigned to duty in Arkansas. He practiced medicine until 1872, when he established the drug business now conducted by his son.

Dr. Bond was one of the organizers of the Arkansas Association of Pharmacists in 1881, and elected the second President, serving for three consecutive years. He was a member of the Arkansas Board of Pharmacy from the time of its organization and for fifteen years served as presiding officer. In 1883 Dr. Bond joined the American Pharmaceutical Association and at once became active in the National Association of Boards of Pharmacy, when it was organized, serving as chairman of the Executive Committee for one term. While devoted to pharmacy in his own state, he was ever helpful in the National organizations, and when the American Pharmaceutical Association decided to meet in Hot Springs, he expressed deep appreciation for the honor to the state he dearly loved.

The following is abstracted from an editorial of the Arkansas Democrat, and speaks of the esteem in which the deceased was held at home:

"Death only emphasizes the work, the life, the achievements and the influences of some men; there are great characters whose influences rise above the forgetfulness of their fellows and disproves the sage fallacy that the good men do is oft interred with their bones. Such a man Little Rock has just been called upon to mourn in the passing of Dr. John B. Bond, one of the truly great men of the community. For fifty years he was a stalwart figure in public affairs, one whose wise counsel in public or private relations was sought and heeded.

"Dr. Bond was not great as some account greatness—he never aspired to political office, neither did he participate in that consuming contest for wealth which has been the incentive of many a life. He was actively interested in all movements for civic betterment, and with his pen, his voice and his money he assisted in the advancement of many projects that aided municipal progress.

"He was interested in schools, in the promotion of industry and commerce, in the moral cleanliness of the city he loved, and in everything that would make his fellow citizens happier and more contented. He was not selfish in this, but altruistic with a self-sacrificing devotion that was an incentive to others less enthusiastic. He was a leader in his profession, an authority to whom the druggists of the state deferred as one in whose opinion they had implicit confidence. Dr. Bond was emphatically ethical, jealous of the honor of his calling, first to condemn that which was wrong or harmful, as well as first to command the good and helpful.

"These were the qualities that made him

loved by his intimates, esteemed by his business and professional associates, and respected by all. He was not a dissembler; he probably would not have succeeded in finer arts of diplomacy, which is too often the synonym for deception. But he was outspoken and direct, although avoiding unseemly contention or needless controversy. Himself the soul of honesty, it was a source of deepest pain that others should be dishonest.

"His passing, with the seventy-eight years that until recently had set lightly upon his erect shoulders, is a distinct loss to the community and his profession. He was one of God's answers to the poet's prayer, 'That He might give us men.'" E. G. E.

The Bulletin Board

PROGRAMS OF SECTIONS.

The programs of the Sections herewith are not complete and will be added to prior to the sessions.

PAPERS FOR SCIENTIFIC SECTION.

Tinctures, W. L. Scoville.

The Increase in Acidity of Hydrogen Peroxide on Standing, C. M. Ramsay and A. M. Clover.

The Retarding Effect of Certain Substances on Pepsin Digestion, C. M. Ramsay.

Infective Agents, F. E. Stewart.

Leucocytic Extract, Mr. Meinhard.

Hydrolysis of Some of the Common Vegetable Oils, W. F. Rudd.

Contraction Produced by Solutions of Salts, A. Bolenbaugh.

Standards and Tests for Absorbent Cotton and Absorbent Gauze, F. B. Kilmer.

Biological Test for the Presence of Arsenic, Tellurium and Selenium, A. Schneider.

History of the Discovery of the Alkaloidal Affinities of Hydrous Aluminum Silicate, J. U. Lloyd.

Estimation of Morphine in Pills and Tablets, H. W. Jones.

Sempervirine, L. E. Sayre.

The Cooperation of Science and Industry, A. R. L. Dohme.

Stability of Preparations Containing Yellow Phosphorus, H. Englehardt and C. E. Winters.

Estimation of Atoxyl, H. Englehardt and C. E. Winters.

The Assay of Balsam of Peru, F. D. Dodge.

COMMERCIAL SECTION.

Tuesday, August 10, 2 P. M.

Joint Session with Section on Education and Legislation.

Address of Chairman of Commercial Section, Edward H. Thiesing.

Address of Chairman of Section on Education and Legislation, Frank H. Freericks.

The Business Needs of Pharmacy and Legislation. For the Commercial Section, W. H. Cousins. For Section on Education and Legislation, Dr. James Hartley Beal.

Commercial Training in Colleges of Pharmacy—How the College May Better Equip the Student for Business. For the Commercial Section, Dr. Henry P. Hynson. For the Section on Education and Legislation, Dr. Wm. G. Anderson.

Present Methods of Prescription Pricing. For the Commercial Section, Dr. A. O. Zwick. For the Section on Education and Legislation, P. Henry Utech.

Nomination of Officers.

Adjournment.

SECOND SESSION.

Wednesday, 9:30 A. M.

Individuality in Advertising, with illustrations, Dr. Wm. C. Alpers.

Arranging and Indexing Stock to Promote Sales and Improve Service, Maurice P. Schwartz.

An Eight Barreled Moth Ball Sale, Wm. J. Lowry, Jr.

The Circulating Library as a Side Line for Druggists, Franklin M. Apple.

Advertising the Prescription Department, Addison Dimmitt.

Own Make Non-Secrets Compared with Other Makes, Fred W. Connolly.

Possibility of a National Line of Non-Secrets to be Prepared by the Individual Druggist but with Common Ownership of Copyrighted Labels. Subject treated by a paper from Prof. Theo. D. Wetterstroem, Benj. E. Pritchard and D. N. Robin.

Adjournment.

THIRD SESSION.

Thursday, 9:30 to 11 A. M.

Perfumes—Basic Material—Production—Preservation—Selling Points, Wm. A. Hall.

Economy in Store Management, A. S. Parker.

Developing the Sale of Cigars. Subject treated by a paper from Ernest Berger and Sol. A. Eckstein.

Election of Officers.

Installation of Officers.

Final Adjournment.

HISTORICAL SECTION.

Thursday, August 12, 2 P. M.

The Chairman's Address, Frederick T. Gordon.

The Historian's Report—E. G. Eberle.

The Secretary's Report—A. H. Clark.

Pharmaceutical Happenings from 1810 to 1814, Being Additions to Contributions Presented 1913-1914, Otto Raubenheimer.

Pharmaceutical Events a Century Ago, Otto Raubenheimer.

Historical Notes of Kansas Pharmaceutical Association, J. S. Chism.

Some Contributions Pharmacy Has Made to Civilization, Miss Zada Cooper.

Brief History of the Work of the Indiana Board of Pharmacy, Wm. H. Rudder.

A memoir of John Criddle Wharton, J. O. Burge.

History of Pharmacy in Montana. Chas. E. Mollet.

Animal Drugs Used in Medicine During the Middle Ages in England and France, George Gehring Marshall.

Autobiographies of American Pharmacists, Wilhelm Bodemann.

The Dreiss Drug Store of San Antonio, Texas, accompanied by photographs, Herman Dreiss.

The Founders of the California College of Pharmacy, Richard E. White.

Early Pharmacy on the Pacific Coast, J. F. Llewellyn.

Illustrated Lecture: Voyage to the East Indies and Drug and Spice Trade of 16th and 17th Centuries, Arthur W. Linton.

Nomination and Election of Officers.

Societies

AMERICAN CHEMICAL SOCIETY TO MEET IN SEATTLE.

The American Chemical Society will hold the fifty-first annual convention in Seattle August 31st; the final social session is scheduled in San Francisco.

As there is a Division of Pharmaceutical Chemistry, some members of the American Pharmaceutical Association will doubtless take advantage of this opportunity to attend this meeting.

The American Chemical Society is listed among the organizations that will have representation on the U. S. Naval Advisory Board of Inventions, of which Thomas A. Edison is to be chairman.

Frank R. Eldred, of Indianapolis, is chairman of the Division of Pharmaceutical Chemistry of the American Chemical Society.

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NEW YORK ASSOCIATION.

The thirty-seventh annual convention of New York State Pharmaceutical Association was held at Buffalo June 29, continuing for four days.

One of the interesting features of the meeting was the address by Ex-Senator Hill, of Buffalo, on the conflict which may result between the states and federal government in narcotic legislation. He viewed the Harrison law as an encroachment upon the rights of states, more particularly on account of the power given the commissioner of internal revenue to make rulings that add to or take from the law.

Resolutions were passed condemning the practice of offering premiums, trading stamps, etc., as unfair competition. A large number of interesting papers were read.

President A. S. Wardle, of Hudson, was re-elected, the other officers are as follows: First vice-president, F. E. Chilson, of Rochester; second vice-president, R. A. Austin, of Cairo; third vice-president, J. T. Stoddard, of Buffalo; secretary, E. S. Dawson, of Syracuse; treasurer, Frank Richardson, of Cambridge.

Executive committee: Dr. Joseph Weinstein, of New York City; Charles N. Lehman, of Tottenville, L. I.; G. S. Slade, of Oneonta.

Dr. William C. Anderson, Dr. Joseph Weinstein and Dr. A. B. Huested were selected as delegates to the American Pharmaceutical Association meeting.

Richfield Springs was chosen for next place of meeting, during the third week of June.

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INDIANA ASSOCIATION.

President Ernest Stahlmuth in his address at the Indiana State Pharmaceutical Association meeting, held at LaPorte, scored the dispensing physician. He deplored the lack of interest by druggists in strengthening the Association.

Among the papers read were the following: Legislation in Indiana, J. M. Barrett; Then and Now, Prof. H. E. Barnard, food and drug commissioner, Indianapolis; Synopsis of A. Ph. A. Model Pharmacy Law, A. F. Sala, Winchester; A Practical Prescriptionist, J. W. Donaldson, Indianapolis; Pharmacy for pharmacists, J. A. Aubry, Hammond; Colloid Solutions, Prof. Edward T. Niles, Indianapolis; Salesmanship and Store Management, A. J. Frazier, Muncie; Arrangement of the Modern Drug Store, M. P. Schwartz; Influence of the A. Ph. A., Prof. C. B. Jordan, Lafayette. Papers were also read by Prof. George D. Timmons, of Valparaiso, and Prof. C. C. Sherrard, of Angola. Dr. F. T. Wilcox, of LaPorte, spoke on Mutual Interests, and J. J. Keene, United States inspector, gave a talk on the United States Narcotic Law.

The new officers are: President, Charles Genolin, Nashville; vice-presidents, W. S. Margowski, Delphi; A. J. Frazier, Muncie; Ira White, South Bend; secretary, William F. Werner, Indianapolis; treasurer, Frank H. Carter, Indianapolis. Executive committee: J. A. Aubrey, Hammond; J. Lovett, Huntington; Wood Wiles, Bloomington.

The next meeting will be held at Indianapolis.

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MICHIGAN ASSOCIATION.

Grant W. Stevens, in his presidential address to the Michigan State Pharmaceutical Association held at Grand Rapids, reviewed the work of the Association and touched upon plans for legislative work of the coming year.

Thos. H. Potts, of the N. A. R. D., in discussing the report of J. H. Webster, chairman of the legislative committee, spoke for uniform laws. Governor W. N. Ferry in an address advocated more reasonable hours in drug stores. Professor Schlotterbeck spoke on the practical side of the drug business.

The following officers were elected: President, C. H. Jongejan, Grand Rapids; vice-presidents, W. H. Fox, Coldwater; Roy Collins, Frankfort; treasurer, John Steketee, Grand Rapids; secretary, D. D. Alton, Fremont.

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MISSISSIPPI ASSOCIATION.

While from the numerical standpoint of additions to the membership, other associations have passed the mark reached by the Mississippi Pharmaceutical Association, relatively the latter increased its membership by a larger percentage than any other. One hundred and seventy-five new members joined the ranks.

President J. C. McGee criticized the stamp tax, spoke in favor of the Harrison law, advocated the passage of the Association Pharmacy bill, recommended the Stevens bill for regulation of the medicine peddler. He endorsed the proposal of having the House of Delegates of the A. Ph. A. become a central organization of state associations.

The following officers were elected to serve during the ensuing year: President, H. M. Faser, Oxford; first vice-president T. C. Matthews, Leland; second vice-president, Charles Watts, Clarksdale; secretary-treasurer, Miss Flora Scarborough, Laurel, re-elected.

Meridian was selected as the next place of meeting.

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MASSACHUSETTS ASSOCIATION.

The thirty-fourth annual meeting of Massachusetts State Pharmaceutical Association met in Springfield June 22 to 24.

President Campbell advocated conservative legislation, favored the Stevens bill, patent law reform and opposed methods of sale, which in effect were nothing more than cutting the price, such as premiums, trading stamps, etc.

The following officers were elected: President, John T. Harper, Great Barrington; vice-presidents, William Hardie, Fall River; W. C. B. Merriam, Springfield, and Walter S. Doane, Worcester; secretary, James F. Guerin, Worcester; treasurer, James F. Fin-

neran, Boston; trustees of permanent fund, William F. Sawyer, Boston; T. E. Mole, Adams; James W. Cooper, Plymouth; for appointment to the state board of pharmacy, James F. Hayes, Fitchburg; George Carroll, Gardner; Frederick Brandes, Worcester; for appointment to the state board of health, Philip V. Erard, Springfield; William M. Curtis, Boston.

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DELAWARE ASSOCIATION OFFICERS.

The following will preside over the affairs of Delaware Pharmaceutical Association during this year: President, Albert Daugherty, Wilmington; vice-presidents, James T. Challenger, New Castle; James W. Wise, Dover; H. P. Luff, Felton; secretary, Miss Norah V. Brendle, Wilmington; treasurer, Oscar C. Draper, Wilmington. Board of directors: John M. Harvey, Wilmington; Erdman Hoffman, Wilmington; George W. Rhoades, Newark; W. H. Chambers, Lewes; James T. Challenger, New Castle.

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GEORGIA ASSOCIATION OFFICERS.

The following officers were elected by Georgia Pharmaceutical Association: President, Samuel E. Bayne, Macon; vice-presidents, Dr. John Wages, Winder; Henry Bell, Albany, and D. A. Solomons, Jr., Savannah; secretary, T. A. Cheatham, Atlanta; treasurer, D. G. Wise, Atlanta.

Atlanta was selected as the next place of meeting.

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NEW JERSEY ASSOCIATION.

The forty-fifth annual meeting of New Jersey Pharmaceutical Association was held June 15 to 18, at Spring Lake.

The legislative committee was instructed to reintroduce a bill in the next legislature, providing for a prerequisite education clause in the Pharmacy law.

A large number of instructive papers were presented and Dr. William Mansfield delivered a stereopticon lecture on The Medicinal Plants Grown in New Jersey. Dr Mansfield and E. G. Eberle were elected to honorary membership.

The association voted to go to Long Branch next year.

The newly elected officers of the association are: President, Charles J. McCloskey, Jersey City; first vice-president, Garrett J. Byrnes, Maplewood; second vice-president, Daniel H. Hills, Spring Lake; secretary, Frank C. Stutzlen, Elizabeth; treasurer, Edgar R. Sparks, Burlington.

Board of Trade—John G. Block, Jersey City; John D. Case, Somerville; Isaac G. Keuper, Trenton: Harry W. Crooks, Newark; Charles Holzhauer, Newark; Charles J. McCloskey, Jersey City, and Frank C. Stutzlen, Elizabeth.

Legislative Committee: S. D. Woolley, Ocean Grove; David Strauss, Newark; G. M. Beringer, Camden; J. C. Gallagher, Jersey City, and T. S. Armstrong, Plainfield.

The Women's Auxiliary elected the following officers: President, Mrs. Louise Munds; vice-presidents, Mrs. Anna Crooks and Mrs. L. A. Taylor; secretary, Mrs. G. H. Horning, and treasurer, Mrs. A. G. Woolley.

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OHIO ASSOCIATION.

The Ohio State Pharmaceutical Association held its 37th annual meeting at Cedar Point, on Lake Erie, July 13 to 16.

While a large part of the constructive work of the convention was that of reorganization and remodeling the Constitution and By-Laws, the usual volume of current business was transacted with good reports of work accomplished by the more important and active committees. Results of the affiliation with the Ohio Public Health Federation during the past year were most gratifying in the legislative work accomplished. Two laws backed by the Association, a prerequisite and a pharmacy bill to return the enforcement of the pharmacy laws to the Board of Pharmacy, were enacted, and a number of undesirable bills were killed. The pharmacy bill, however, was vetoed by the Governor on a minor point.

The officers elected were: President, J. F. Gallaher, Dayton; First Vice President, F. D. Christian, Sidney; Second Vice President, W. H. Brinker, Bellevue; Secretary, Theo. D. Wetterstroem, Cincinnati; Treasurer, L. W. Funk, Columbus; Member of Council for Five Years, W. M. Bowman, Toledo.

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FLAVORING EXTRACT MANUFACTURERS' ASSOCIATION.

The fifth annual meeting of the Flavoring Extract Manufacturers' Association of the United States of America was held in the Hotel Statler, in Cleveland, O., on July 8, 9 and 10.

Resolutions indorsing the Stevens bill offering price protection for standard articles of commerce, and the model bill prohibiting all manner of misrepresentation, verbal as well as written or printed, were adopted by the members at the business sessions. Frank L. Beggs, of Newark, O., formerly first vice-president, was elected president, succeeding Dr. S. H. Baer, of St. Louis, Mo., who was chosen president of the Association at last year's meeting. Several other changes were made in the other offices, the election resulting as follows: President, Frank L. Beggs, of Newark, Ohio; first vice-president, C. F. Sauer, of Richmond, Va.; second vice-president, J. O. Schlotterbeck, of Rochester, N. Y.; secretary, F. P. Beers, of Earlville, N. Y.; and treasurer, Gordon M. Day, of Milwaukee, Wis., succeeding Robert F. Heekin, of Cincinnati, O.

The Pharmacist and the Law

Recent court decisions, involving fixed prices should not affect the attitude of druggists nor associations anent the Stevens bill.

The Stevens bill is intended to legalize contract for the control of resale prices, irrespective of the patent law, as a protection to good-will and reputation.

The opposers of the measure should convince retail druggists that they must come to the support of this desirable legislation, otherwise it will not be enacted. The opposition includes mail order houses, chain stores, etc.

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PHILADELPHIA DRUGGISTS PROTEST AGAINST TREASURY DECISION No. 2213.

Pointing out that Treasury Decision No. 2213, recently issued, is not only confusing and misleading, but that it discriminates between legitimate pharmacy in favor of patent and proprietary medicines, the Philadelphia Association of Retail Druggists at a largely-attended meeting at the Philadelphia College of Pharmacy, July 9, after a thorough discussion of the decision, adopted the following resolutions:

WHEREAS, In the enforcement of the Harrison law a Treasury Decision No. 2,213 has been issued by the Department of Internal Revenue; and

WHEREAS, In this decision an interpretation of the words "preparations," "remedies" and "prescriptions" have materially changed the exemptions in Article 6 of the law, which is contrary to the thought of those responsible for the enactment of the law; and

WHEREAS, This decision prevents the renewal of prescriptions containing narcotics in any quantities, for both external and internal use, allowing at the same time the sale of patent and proprietary remedies and medicines containing narcotics in quantities exempted; and

WHEREAS, The enforcement of this ruling discriminates between any legitimate pharmacy in favor of patent and proprietary medicines; and

WHEREAS, Webster's definition of "prescription" as used medicinally is defined as a "prescribed remedy," which in Article 6 of the law is exempt; therefore, be it

Resolved, That the Philadelphia Association of Retail Druggists in meeting assembled at Philadelphia, Pa., on July 9, protest against this unjust Treasury decision; and be it

Resolved, That the said decision is contrary to the wording of Article 6 of the act; and be it further

Resolved, That the decision discriminates against ethical pharmacy in favor of patent and proprietary medicines containing exempted narcotics; and be it further

Resolved, That the enforcing of the decision will work a hardship on pharmacists and the medical profession, as well as the laity in the renewing of legitimate prescriptions, calling for narcotics in minute quantities; and be it further

Resolved, That the Philadelphia Association of Retail Druggists, in meeting assembled, protest against the decision, as a whole, and call upon the Hon. W. G McAdoo, Secretary of the Treasury of the United States, and the Hon. Wm. H. Osborn, Commissioner of Internal Revenue of the United States, for a just and equitable hearing on Treasury Decision No. 2,213; and be it further

Resolved, That a copy of these resolutions be forwarded to the Hon. Secretary of the Treasury of the United States and to the Commissioner of Internal Revenue of the United States.

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FOOD AND DRUG LAW ANNOUNCEMENTS.

The United States Bureau of Chemistry has collected a sample of a product labeled "Oil of Sandalwood, German." Analysis shows this article to consist of a mixture of oil of amyris balsamifera (sometimes improperly called "West Indian oil of sandal-

wood") and oil of copaiba. It does not contain any true oil of sandalwood. The name "Oil of Sandalwood, German," does not represent the facts, and the product is therefore misbranded. It should be labeled as "Oil of Amyris Balsamifera Compound," "Oil of Copaiba Compound," "Oil of Copaiba and Amyris Balsamifera," or vice versa, depending on the oil which predominates in the article. In this connection Food Inspection Decision 63, relating to the use of the word "compound" in names of drug products, should be consulted.

Food Inspection Decisions 142 and 146 do not forbid the use of saccharin in drugs generally. If an article is sold under a name recognized by the United States Pharmacopœia or National Formulary, and such article deviates from the prescribed standard, however, the nature and character of such deviation must be clearly stated on the label, as required by Section 7 of the Federal Food and Drugs Act.

The term "aromatized castor oil" on a label is not considered sufficient to fulfill the requirements of the act in describing a castor oil containing saccharin in addition to certain aromatics. The label should also plainly show that the article varies from the pharmacopœial standard for castor oil in that it is sweetened with saccharin.

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SODA FOUNTAINS AS SOURCES OF INFECTION.

A. J. Lanza of the Public Health Service in an article in Public Health Reports on the interstate migration of tuberculous persons, says that soda-fountain utensils are common eating and drinking devices in the most vicious sense of the word. He has seen advanced consumptives at soda fountains, and as soda fountains are a common rendezvous for children, the danger is apparent. Soda-fountain attendants are likely to be careless in the handling and washing of cups, spoons and glasses, and he has observed on more than one occasion advanced consumptives put down glass and spoon which were then carelessly rinsed in standing water and placed on the shelf for the next customer. He says that in hotels, cafés and other eating places tableware is generally cleaned in machines, or at least soap and hot water are used, and while potentially sources of infection, the danger would be less than by the careless rinsing that suffices at soda fountains.

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HABIT-FORMING DRUGS—HEROIN—SALE BY CLERK.

Appeal was made from a conviction of unlawfully selling morphine, the trial court having directed the jury to return a verdict of guilty. The New Jersey act upon which the indictment was based (P. L. 1908, p. 399), reads as follows: "Any person who shall sell, give away, furnish or dispose of the alkaloid cocaine, or its salt, alpha or beta eucaine, or their salts, opium, morphine, codeine, chloral or any of the derivatives of chloral, or who shall sell, give away, furnish or dispose of any admixture of cocaine or eucaine or any patent or proprietary remedy containing cocaine or eucaine, except on the written prescription of a duly licensed and practicing physician, shall be guilty of a misdemeanor." The defendant was a druggist in Jersey City, and a graduate of a recognized college of pharmacy. The alleged commission of the offense charged consisted in the fact that a clerk in the defendant's employ sold a bottle containing 100 tablets, each tablet containing one-twelfth of a grain of "heroin," to one Courtney. The clerk when employed had been instructed by the defendant to sell no drugs contrary to law. Courtney, it seemed, had made prior purchases of the drug at the defendant's store, but the defendant testified that when these sales were made he was not informed that heroin was included in the category of habit-forming drugs, and it was held to be inferable from the testimony that the general discovery of that fact has been only of comparatively recent date.

To bring the commission of the offense within the language of the statute, the state offered expert testimony to show that heroin is in fact morphine. Expert chemists in behalf of the defendant testified that heroin and morphine are two distinct drugs, the latter being a very old alkaloid, and the former a comparatively recent derivative of morphine, and that each responds differently to recognized chemical tests. It was also in evidence that the two drugs respond differently on the human system, and that heroin may be used with benefit for throat ailments. The court did not deem it necessary to say

more in the disposition of the case than that the statute in question does not include in its categorical statement of the inhibited habit-forming drugs the drug known as heroin. If it were known and in existence by name as a habit-forming drug at the time of the enactment of the prohibiting law, it must be assumed that the Legislature purposely excluded it. If it were not known, and not in existence, at that period, it was equally manifest that the Legislature did not have it in mind in its generic designation of habit-forming drugs. But if it were conceded that the language of the act included heroin among the derivatives of the drugs specifically condemned, the difficulty of sustaining the conviction lay in the fact that the defendant personally did not sell the drug, that he had given orders to his clerk not to sell habit-forming drugs, and that when he learned that this drug was included in the class of habit-forming drugs, he ceased to sell it. This testimony presented an issue of fact as to the defendant's guilt which should have been left to the jury to determine. The judgment of conviction was therefore reversed.

State v. Norwood. New Jersey Supreme Court, 93 Atl. 683.

Council Business

COUNCIL LETTER No. 28.

Philadelphia, Pa., July 2, 1915.

To the Members of the Council:

Gentlemen—*Motion No. 44 (Election of Members; Applications No. 175 to No. 215, inclusive)*, has received a majority of affirmative votes.

Motion No. 45 (Election of Members). You are requested to vote on the following applications for membership:

No. 216. Harry Vogel Becker, 576 Mission St., San Francisco, Cal., rec. by Fred I. Lackenbach and K. B. Bowerman.

No. 217. William J. Clancy, 657 First St., LaSalle, Ill., rec. by Wm. B. Day and C. M. Snow.

No. 218. John W. Forbing, 2435 Brown St., Omaha, Neb., rec. by H. F. Gerald, M. D., and I. Curtis Arledge.

No. 219. Harry Alexander Shapiro, 139 Manning St., Portsmouth, N. H., rec. by John G. Godding and Theodore J. Bradley.

No. 220. Oakley Smith Skinner, Windsor, Vermont, rec. by C. Herbert Packard and Theodore J. Bradley.

No. 221. Armand Merrill Dupaul, Hamilton St., Southbridge, Mass., rec. by Theodore J. Bradley and Fred W. Archer.

No. 222. James Weston Pratt, 5 Summer St., Quincy, Mass., rec. by Howard H. Smith and Theodore J. Bradley.

No. 223. Florin Joseph Amrhein, 61 Fort Ave., Roxbury, Boston, Mass., rec. by Elie H. LaPierre and Theodore J. Bradley.

No. 224. George Weldon, Paris, Idaho, rec. by H. H. Whittlesey and Wm. B. Day.

No. 225. Henry Louis Kath, West 85th St., near 32d St., Seattle, Wash., rec. by C. W. Johnson and Forest J. Goodrich.

No. 226. Harry Breslaw, 64 West 144th St., New York, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in Chemistry, University State of New Jersey, "Tea as Sold in the American Market."

No. 227. Jacob Bankoff, 345 Hopkinson Ave., Brooklyn, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in Balneology, University State of New Jersey, "Mineral Springs of the Fifth District of New Jersey."

No. 228. Charles Mueller, 1304 John St., Guttenberg, N. J., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in History of Pharmacy, University State of New Jersey, "Contribution to the Oldest History of Pharmacy."

No. 229. Abraham Rosenberg, 524 East 12th St., New York, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis Presented in Physiological Chemistry, University State of New Jersey, "Variations of Carbohydrates in the Urine in Diabetes."

No. 230. Reuben Podolsky, 885 Jennings Ave., New York, N. Y., rec. by Otto Raubenheimer and Jeannot Hostmann. Best Thesis in Pharmacy, University State of New Jersey, "Improvements in Galenical Preparations of Digitalis."

No. 231. William C. Royse, 431 South Fifth St., Terre Haute, Ind., rec. by A. H. Dewey and W. F. Gidley.

No. 232. Edward Rudy Gifford, 23 Robin Hood St., Dorchester, Mass., rec. by Leon A. Thompson and Theodore J. Bradley.

No. 233. Fred Martin Neninger, 513 South Warren St., Syracuse, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 234. Jacob Bernstein, 45 Peckham St., Buffalo, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 235. Hugh Adelbert Judd, 836 Main St., Buffalo, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 236. Bernard Edward Tracy, 72 West

North St., Ilion, N. Y., rec. by Willis F. Gregory and Wm. B. Day.

No. 237. Isaac Benjamin Bloomfield, 1638 North 8th St., Philadelphia, Pa., rec. by J. W. Sturmer and F. E. Stewart.

No. 238. George V. Whitney, M. D., 2206 Freeman St., Houston, Texas, rec. by E. G. Eberle and R. H. Walker.

No. 239. Frank B. Dwyer, 1320 Washington Ave., Houston, Texas, rec. by R. H. Walker and E. G. Eberle.

No. 240. Elbert S. Dunn, Neches, Texas, rec. by E. G. Eberle and R. H. Walker.

No. 241. James G. Mauzy, 511 Main St., Plattsmouth, Neb., rec. by Frederick G. Fricke and A. V. Pease.

No. 242. Claude Aikman, Jenks, Oklahoma, rec. by Charles H. Stocking and Edwin DeBarr.

No. 243. William Eischeid, Norman, Okla., rec. by Charles H. Stocking and Edwin DeBarr.

No. 244. E. E. Weiss, Higgins, Texas, rec. by Charles H. Stocking and Edwin DeBarr.

No. 245. Oscar G. Salb, care John T. Milliken & Co., St. Louis, Mo., rec. by J. H. Beal and J. W. England.

No. 246. Charles W. Antony, 207 Tuscarawas St., W, Canton, Ohio, rec. by Frank Cain and J. H. Beal.

No. 247. Raymond Keith O'Brien, 222 N. Craig St., Pittsburgh, Pa., rec. by J. A. Koch and A. F. Judd. Prize membership—Materia Medica—by Dr. A. F. Judd, Pittsburgh College of Pharmacy.

No. 248. Elmer Bernard Deiss, 1436 Fifth Ave., Pittsburgh, Pa., rec. by J. A. Koch and Carl Saalbach. Prize membership—Pharmacy—by Dr. Louis Saalbach, Pittsburgh College of Pharmacy.

No. 249. Charles Hornor Troxell, 130 West Fourth St., Weston, W. Va., rec. by J. A. Koch and Carl Saalbach. Prize membership—Pharmaceutical Products—by Dr. Louis Saalbach, Pittsburgh College of Pharmacy.

No. 250. Henry J. Strauch, 848 East Ohio St., Pittsburgh, Pa., rec. by J. A. Koch and Carl Saalbach. Prize membership—Pharmacognosy—by Dr. L. K. Darbaker, Pittsburgh College of Pharmacy.

No. 251. Henry A. Stype, 658 Lincoln Ave., East Liverpool, Ohio, rec by J. A. Koch and Carl Saalbach. Prize membership—Organic Chemistry—by Dr. J. A. Koch, Pittsburgh College of Pharmacy.

No. 252. Herman Henry Blomeier, 439 Ninth Ave., New York, N. Y., rec. by Louis Berger and J. Leon Lascoff.

No. 253. William Franklin Baum, 318 Vermilion St., Danville, Ill., rec. by Wm. B. Day and C. M. Snow.

No. 254. Auguste Bois, 528 Cambridge St., Allston, Mass., rec. by Albert J. Brunelle and William S. Flint.

No. 255. Joseph Kahn, Phar. D., 110 Bay Seventeenth St., Brooklyn, N. Y., rec. by Caswell A. Mayo and Jeannot Hostmann.

No. 256. Elvin R. Bergren, Essex, Iowa, rec. by Wilber J. Teeters and R. A. Kuever.

J. W. ENGLAND,
Secretary of the Council.

415 N. Thirty-third Street.

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WAR DEPARTMENT.

List of changes of stations covering period ending June 30, 1915, in the cases of Sergeants First Class, and Sergeants:

SERGEANTS FIRST CLASS.

John O. Perry, from Ft. H. G. Wright to Ft. Michie.

Adolph H. Lienhart, from Ft. Michie to Ft. H. G. Wright.

Yarnall L. Bowers, from Ft. Adams to Ft. St. Michael.

Harry N. Fuller, from Ft. St. Michael to Ft. Lawton for assignment.

Shelby G. Cox, from Ft. Omaha to Ft. Gibbon.

James E. Young, from Walter Reed General Hospital to Fairbanks, Alaska.

Richard A. Wood, from Ft. Gibbon to Ft. Lawton for assignment.

Albert G. Fisher, from Fairbanks, Alaska, to Ft. Lawton for assingment.

George W. Wersebe, from Ambulance Company No. 3, to the Philippine Department.

Walter H. Cook, from the Hawaiian Department to furlough in the U. S.

Robert G. Kennedy, from the Philippine Department to Ft. Riley.

Thomas G. Williams, from the Philippine Department to Ambulance Co. No. 1.

Glen D. Gorton, from Ft. Riley to Ft. Leavenworth.

William D. Walters, from Ft. Wadsworth to the Philippine Department.

William George, from Ambulance Company No. 1 to the 11th Infantry Hospital.

Edward W. Pennypacker, from the 11th Infantry Hospital to Ft. Wadsworth.

Frank O. Nicodemus, from the 2d Division to Ft. Des Moines.

Robert S. Ferguson, from Ft. Des Moines to the 2d Division.

SERGEANTS.

Horace J. Caterer, from Ft. Jay to the U. S. Mine Planter "General Samuel M. Mills."

William Alexander, from the U. S. Mine Planter" General Samuel M. Mills to Ft. Jay.

Alvis C. Waller, from the Letterman General Hospital to the Philippines Department.

William Q. Fancher, from the Letterman General Hospital to the Philippines Department.

Melville B. Hamilton, from the 2d Division to Ft. Omaha.

Isaac N. Hendrixson, from the Army and Navy General Hospital to Ambulance Company No. 3.

Marshall Ellis, Jr., from Ft. Michie to Ft. Terry.

George Bruley, from Ft. Snelling to Ft. Brady.

Benjamin F. Mason, from Ft. Brady to Ft. Snelling.

John L. Morgan, from Ft. Baker to the Presidio of San Francisco.

Schiller Scroggs, from Ft. Logan to Ambulance Company No. 1.

Patrick Darby, from Ft. Robinson to the 2d Division.

Charles W. Jensen, from Ft. Hamilton to the Cable Boat "Joseph Henry."

Elmer Jeen, from the Philippine Department to the U. S. on furlough.

William Bowman, from the Philippine Department to the U. S. on furlough.

August H. Waitz, from Vancouver Barracks to Ft. Flagler.

Clarence K. Aikin, from Ft. Oglethorpe to Ft. Barrancas.

Charles L. Briscoe, from Ft. Hancock to the Philippine Department on August Transport.

Harry E. Lyons, from Ft. Hancock to the Philippine Department on August Transport.

Olaf C. Larsen, from the Cable Boat "Joseph Henry" to Ft. H. G. Wright.

Joseph Stahl, from Ambulance Company No. 7 to Ft. Bliss.

DETERMINATION OF UREA IN BLOOD.

The urea in blood may be determined with facility and accuracy by precipitating it as the urea-xanthydrol compound by means of Fosse's method. In order that the precipitate shall be pure, it is necessary first to eliminate any albumin present. This is done by means of the following modified Tanret's reagent: Mercuric chloride, 2.71 gms; potassium iodide, 7.2 gms.; glacial acetic acid, 66.6 mils; water to make up to 100 mils. Ten mils of serum of the blood to be tested and 10 mils of this reagent are mixed in a centrifuge tube and spun. About 17 mils of liquid will be obtained. An aliquot part of this, say 15 mils, is treated with an equal volume of glacial acetic acid, and then with a volume of 1:10 methyl alcohol solution of xanthydrol equal to one-twentieth of the total volume, which in this case would be 1.5 mils. After one hour the precipitate is collected on the filter pump, preferably on the special form of filter devised by the author, then washed with alcohol, dried, and weighed. The amount of urea per litre of urine may be found from the following formula:

$$\frac{\text{Weight}}{7} \times \frac{20}{15} \times 100$$

—*R. Fosse, A. Robyn, and F. Francois (Comptes rend., 1914, 159, 367, through Pharmaceutical Journal.)*

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

LADISH, ERICH H.,
From 2015 Cleveland Ave., Chicago, Ill. (Residence).
To 172 W. North Ave., Chicago, Ill. (Business).

NOAKS, RICHARD S.,
From Dover, Tenn.
To National Cemetery, City Point, Va.

CHAPMAN, THOS. A.,
From Portland, Ore.
To residence unknown.

WAITZ, AUGUST H.,
From Mindanao, P. I.
To residence unknown.

BROWN, ROBT. O.,
From Cooper, Texas.
To 612 Eighth St., Wichita Falls, Texas.

JACKMAN, W. F.,
From 69 Medbury Ave., Detroit, Mich.
To 178 Colburn Ave., Detroit, Mich.

PORTMANN, LEO F.,
From 613 Sandal St., Canton, Ohio.
To 212 McKinley Ave., S. W., Canton, O.

FLOYD, HENRY B.,
From Box 321, Washington, D. C.
To National College of Pharm., 808 I St., N. W., Washington, D. C.

SCHULTZ, HENRY S.,
From 1607 Transportation Bldg Chicago, Ill.
To 1625 Transportation Bldg., Chicago, Ill.

ACKERMANN, ADOLPH H.,
From 148 Dudley St., Boston, Mass.
To 313 Union St., Lynn, Mass.

MILLER, CHAS. E.,
From Canacao, P. I.
To Navy Yard Dispensary, Norfolk, Va.

PFAFFLIN, H. A.,
From 2729 N. Penn. Ave., Indianapolis, Ind.
To 3711 E. Wash St., Indianapolis, Ind.

SCOTT, E. B.,
From 109 Maryland Ave., N. E., Washington, D. C.
To 2016 P. St., N. W., Washington, D. C.

WEISE, CARL E.,
From 2705 West End Ave., Nashville, Tenn.
To 2704 West End Ave., Nashville, Tenn.

MOULDER, BETTIE L.,
From Linn Creek, Mo.
To 1429 Ocean Front, Santa Monica, Cal.

CLARK, A. P. (Mrs.),
From 140 So. Beach St., Daytona, Fla.
To 124 So. Beach St., Daytona, Fla.

<>

A business should be known for the honesty and integrity of those who are behind it,—the kind of honesty that is taken for granted; the kind that shows our acts to be automatically honest, as if from habit, and it cannot be otherwise, for as soon as we begin to notice that we are honest, or call attention to the fact, and be much impressed by our choice of methods, at that moment we are under suspicion, for honesty, from that moment, has ceased to be a habit.—Caxton.

Wanted—Natural History Books.

The Lloyd Library, 309 West Court Street, Cincinnati, Ohio, is interested in the purchase of books relating to all branches of natural history. Book dealers issuing catalogues relating to these subjects are requested to send them to our address. Offers regarding the sale of books on these subjects will be considered at any time.

THE LLOYD LIBRARY, 309 WEST COURT ST., CINCINNATI, OHIO.

WILLIAM C. ALPERS, Cleveland, Ohio

Sixty-fourth President of the American Pharmaceutical Association

Will Preside at the 1916 Meeting, to be Held in Atlantic City, N. J.

(For Sketch see page 1086)



William C. Alpers, Sc. D.,
President of the
American Pharmaceutical Association

The Journal of the American Pharmaceutical Association

Volume IV SEPTEMBER, 1915 No. 9

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The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

The Sixty-Third Annual Convention

Held at San Francisco, California, August 9-14, 1915

AMERICAN PHARMACEUTICAL ASSOCIATION.

MINUTES OF THE PROCEEDINGS OF THE FIRST GENERAL SESSION.

Before calling the general session to order, the following proceedings were had: (Professor F. T. Green of California in the chair.)

Chairman Green: Ladies and Gentlemen—It falls to the speaker's lot to do some preliminary introducing, or, rather to call to order this meeting of the American Pharmaceutical Association, the sixty-third annual meeting of this Association, an association broad in its national scope. On behalf of the Allied Drug Interests of San Francisco, or of California rather, I call it to order.

I also call your attention to the fact that in this broad name, "The Allied Drug Interests," we mean everything in the drug business, from the small boy to the wholesaler, and, therefore, on behalf of the Allied Drug Interests of California, I take pleasure in introducing to you the representative of Mayor Rolph of San Francisco, Mr. Sylvester McAtee, who will now address you.

Mr. McAtee: Mr. President, Ladies and Gentlemen:

It may sound peculiar for me to say it, but I am sorry I have to be here this afternoon therefore denying you the pleasure of hearing Mayor Rolph. Briefly, the Mayor accepted the invitation to speak to you today, without being informed of the time and place.

Most of these affairs begin in the morning and he did not have in mind the

likelihood that your meeting would be in the afternoon, and as Monday afternoon is the time for the holding of the meeting of the Board of Supervisors, beginning at 2 o'clock, at which the Mayor must preside, and as it happens to be a rather important meeting, he found it impossible to absent himself from that meeting. Therefore, I am here, a poor representative of the city, I admit, but you are in the situation, and what can you do about it? (Applause.)

However, I want to extend to you on behalf of Mayor Rolph, and therefore the city, the formal greetings of San Francisco.

We have had many meetings here this year. The best thing that has been accomplished by this Exposition, if it has done nothing else during its entire period, is the fact that it has brought together people, associations such as this, from all parts of the United States. They have come from every state, they have been of various national extractions, but they have been brought here and have been woven together more closely into the fabric of our national government.

Your organization, I understand, is the oldest pharmaceutical association in the United States. You have here men who are leaders in their particular profession.

We are glad indeed to welcome you. We realize that from such associations as this great good must come, not alone to our own community but to the entire United States, because the subjects under discussion here will disseminate knowledge which will be spread in turn to all parts of the country. Therefore, it is a peculiar pleasure that we of San Francisco have this year of welcoming such an association as yours.

There is a selfish aspect to it. We can simply rejoice that San Francisco has so many visitors. We are glad that our exposition is a success, but that is altogether the selfish aspect.

But there is something more than that. And Mayor Rolph and San Francisco feel that there is more than that due from San Francisco to its guests. We want you to feel that we are your hosts this year. We want to be worthy hosts of so many distinguished visitors. Therefore, we want to make our welcome to you the most hospitable reception in our power. We think we have somewhat of a reputation for hospitality. Incidentally, we want to ask the strangers to beware of their San Franciscan brothers, because the Californian is a peculiar type. He thinks when the Lord created California there he stopped, at the finish of his work, and the greatest of his work, but you will notice that they have the habit of swelling out their chests and saying, "We are Californians" and particularly saying, "We are San Franciscans." They seem to think it is a personal achievement of their own and they are entitled to some credit because of that fact. (Laughter.)

I will warn you that we will have it that way so you will have to look out for us; but we hope our reputation for hospitality is not altogether undeserved, and we hope you will find the warmth of our hospitality reflected upon you.

We hope your sessions here will be entirely successful; that you will have a good impression of San Francisco and California; that you will be pleased with our Exposition and will return home satisfied with yourselves, and with the world, and particularly California.

Therefore, I wish to say again, that I bring to you the regards of Mayor Rolph, and San Francisco and California, and extend to you the regrets of Mayor Rolph that he could not be here this afternoon to give to you from his own lips his greetings to your Association. (Prolonged applause.)

President Caswell A. Mayo, in responding to the welcome, said:

Mr. McAtee, Friends and Fellow Members of the American Pharmaceutical Association, Ladies and Gentlemen:

On behalf of the Association, as one of those who came from the Atlantic to the Pacific to see the wonders you have in store for us, I wish to thank you for your kind hospitality and courteous words of welcome.

Ordinarily we receive a warm welcome. We received a warm welcome at the

Nashville meeting, and we came to the conclusion that it is not always the kind of thing we should receive in the summer time.

We came here expecting to receive a warm welcome and some of us put our warm weather clothing in our trunks (which haven't arrived and we may not get them here at the Exposition) and we have been very nigh frozen ever since.

We would rather have the warmth in your welcome than in your climate.

I come to this city with a great deal of pleasure. It affords me a great deal of pleasure to speak for the Association here, because my earliest boyhood dreams were filled with the visions of the Golden Gate and things of California.

My father rode on horseback from St. Louis to Sacramento in 1849. He panned gold in the Sacramento. He was one of the vigilance committee that made San Francisco a safe place to live in.

The only heritage I have from all his privations and work is a memory—a keen appreciation of the high enterprise that has made so much of the wonderful possibilities you have in California; which has turned your deserts into smiling valleys and has made your fertile valleys sources of more wealth than could be found in any placer or tunnel or lode.

It, therefore, becomes my great pleasure to speak on behalf of the Association, and I only wish my tongue could utter the thoughts that arise in me to give adequate expression to our appreciation of the great welcome given us here in San Francisco. We thank you for your hospitality. (Prolonged applause.)

The first general session was then called to order, Monday, August 9, 1915, at 4:10 p. m., by President Caswell A. Mayo, in the convention hall of the Civic Auditorium, San Francisco, California.

President Mayo: We will proceed with the regular order of business, and I hereby declare the sixty-third annual convention of the American Pharmaceutical Association in order.

As President of this Association it becomes my duty to read to you an address. I wish I could have made this address more brief, but, unfortunately I delayed its preparation until so late a time that I found it rather lengthy.

The President then asked Vice-President Gietner to take the chair while he presented his address, which the President proceeded to read as follows:

PRESIDENT MAYO'S ADDRESS.



It is with peculiar pleasure that I have the honor to address the members of the American Pharmaceutical Association as President, during this meeting in San Francisco. My boyhood days were filled with dreams of the Golden Gate. My father rode with the Forty-niners on horseback from St. Louis to Sacramento. He panned gold along the Sacramento river, fought Indians on the Klamath and took part in the work of the vigilance committee which made San Francisco safe from violence. The only heritage he left me from all his privation and his toil here is a vivid appreciation of that high spirit of enterprise, of fearlessness and of tireless industry, which working through all the years has made California what it now is; has turned its deserts into fairylands of beauty and has made its fruitful valleys sources of greater wealth than ever was gained from lode and placer and tunnel. It is this vivid imagination, this wonderful spirit of boundless enthusiasm and of untiring energy which has made possible your marvellous city, and your beautiful Exposition, and which has brought our

Association again to the Pacific Coast. We hope that we may be able to so interest our hosts in the work of our organization, in our efforts to elevate the cause of pharmacy and to improve the conditions of pharmacists that they will join with us in our efforts and bring to bear on the problems of our Association those qualities which they have seized upon and made the best possible use of the natural advantages of this wonderful country.

EXPEDITING BUSINESS OF THE ASSOCIATION.

At the Detroit meeting of the American Pharmaceutical Association a year ago, an effort was made to dispense with, as much as possible, the purely perfunctory portions of the program. The result was a meeting characterized by the highest efficiency. I know of no meeting of the Association at which so much work was accomplished, in so satisfactory a manner, in so short a time. The application of efficiency engineering to association work was most satisfactory. It is to be hoped that the good example set by the committee in charge of the program for that occasion will be followed and improved upon. The meetings of this Association bring together busy men whose time is of value. We cannot expect to attract these men and to retain their interest in the work if that time is frittered away in irrelevant and immaterial ceremonials. I do not wish to curtail the social entertainments provided. These entertainments furnish an essential and to many, the most inviting part of the meetings, but I do hope that it will be possible to dispense with many purely formal addresses and with those traditional but unnecessary motions which consume so much time and which accomplish so little good for the organization.

I have made a study of the programs followed by many state associations and have been surprised and pained to see how large a proportion of the time of these associations is devoted to addresses of welcome, made by people who have no interest in the members or their work and by replies made by men who have nothing to say and use a good deal of unnecessary time to say it in.

Let us set an example of efficiency in our own program which may prove helpful to all pharmaceutical organizations.

As one means to that end I recommend that the committee on by-laws be instructed to prepare and present for consideration amendments providing that the minutes of the Council shall not be read at the general sessions but that a bulletin be posted daily of acts of the Council so that any member interested in any particular action may in the general session call for full information regarding such action. All acts of the Council to remain subject to review by the general sesssion.

The American Chemical Society provides for associate members who participate in the proceedings of the branches but not in those of the general meeting and who do not receive the publications of the Society. These members pay $2 instead of $10 annual dues. This associate membership has been helpful in obtaining recruits to the full membership. A similar associate membership has been proposed for our Association.

On investigation I find that the same purpose can be served without any changes in the laws of the general association by having the branches arrange for associate members of the branches. I am told that they now have that authority though many of the officers are apparently not aware of it. I therefore recommend that the General Secretary be instructed to write to the officers of the several Branches directing their attention to this suggestion and pointing out just what steps would have to be taken by any branch which might desire to adopt this suggestion.

As I approach the conclusion of my year of office I am impressed with the opportunities for service which I have missed, largely through my failure to recognize these opportunities early enough in the course of my administration. The present method of election of officers affords an opportunity for the incoming officials to lay their plans long before induction into office, and I recommend that the General Secretary, who is in effect a permanent official, be instructed when

notified of the results of the ballot to communicate with each of the newly elected officials, outlining the duties which will be required of him and suggesting to the newly elected President that he endeavor, so far as possible, to complete the list of his appointments before the meeting at which he is to be installed, so that he will be in a position to announce his committees when installed, thus giving the members of the committees appointed by him, ample time in which to prepare their work for the succeeding year's meeting.

PHARMACEUTICAL INDUSTRIES.

Not since our own country was plunged into fratricidal strife more than half a century ago have we confronted such an upheaval in politics, in finance and in commerce as we are now going through. As a result of the isolation incident to the civil war the Republican party became, as the occasion seemed to demand, the party of protection and sought to build up our own industries by protection with a view to meeting those conditions brought about by isolation from the remainder of the world. The Democratic party adhered to the principles of an open market, and with all the various changes in policies incidental to changing conditions, these two main principles of difference have been adhered to by the two different political parties for the past half century.

We are again confronting a need for helping ourselves, for being independent of international trade due to the interruptions to commerce caused by the European War. I should not be surprised to see the leaders of the Democratic party deliberately adopt a policy of protection, as the proper means for meeting these conditions of commerce forced upon us against our will.

OUR CRUDE DRUG SUPPLIES.

The sudden cessation of imports from Central Europe last August precipitated a panic in the crude drug market which became so thoroughly demoralized that no quotations could be made except for spot transactions. Those who consumed crude drugs in large lots, becoming panic stricken, bought up stocks for their own need regardless of prices. This panicky condition of the market, as you are all well aware, soon disappeared leaving a range of quotations, however, much above those which rule in normal times. The vast scale upon which the war is being carried on, the immense hordes of troops thrown into the field and the huge sums of money expended in the prosecution of the war lead us at first to hope for its early termination. These hopes had something to do with our attitude towards supplies of crude drugs. We felt that at the worst we would be deprived of one year's crop. The impression has gained ground that we shall have war for at least one, and probably several years longer. This conviction is echoed in the prices commanded by crude drugs of European origin, which have continued to rise in cost as the stocks have diminished in volume. We are now confronted with the need for prompt, energetic and concerted action to avoid any further curtailment of our already scant stocks.

A survey of the indigenous materia medica shows that if it were feasible to collect all the drugs which grow wild in the United States we should be able to supply our deficiencies in many directions. The increased attention which has been given of late years to the question of drug plant cultivation has pointed out certain directions in which, with but a little encouragement, we may hope to become independent of imported supplies. At the Detroit meeting the President was instructed to appoint a committee on crude drug supplies with the object of making a survey of the crude drug situation and possibly pointing out a way to collect at least a portion of such drugs as are indigenous in this country but which have not heretofore been collected on a commercial scale. While I elaborated a comprehensive scheme for work of such a committee and asked several members to act as its chairman, the men appointed were unable to undertake the task and

the correspondence with first one and then another possible chairman took so long that there was not sufficient time left in which to put into execution the plans which I had in view. I have therefore not appointed the committee, but recommend that the incoming President be instructed to appoint such a committee on the supplies of botanical drugs with the request that the members of this committee carry on a campaign of education throughout the United States as to the indigenous drugs which may be collected with possible profit to the collector and with advantage to the cause of medicine, soliciting the coöperation of the various state agricultural experiment stations and state agricultural colleges and of the United States Government. The Department of Agriculture has already done much preliminary work in this direction. Some of the State Agricultural Colleges have likewise taken up the subject of drug culture and drug collection. We are all familiar with the excellent pioneer work in the matter of drug culture which has been done by the School of Pharmacy of Minnesota and the School of Pharmacy of the University of Wisconsin.

The University of Michigan at Ann Arbor has recently acquired 85 acres of land which is to be devoted to experimental drug farming. The University of Nebraska at Lincoln has also just begun the development of a medicinal plant garden and the University of Washington at Seattle has lately expanded their small botanical garden so as to enable the institution to furnish information regarding such drugs as may be grown advantageously in that state.

Manufacturers of medicinal products have paid considerable attention of late years to the cultivation of medicinal plants. In England several firms have long had extensive plantations for the growth of certain drugs and have been enabled to command high prices for their products even in competition with the plentiful supply at the low prices which prevailed prior to the war in Europe. Such firms as Stafford Allen & Sons, Ransome & Son and Squire & Son have long since placed drug culture in England on a sound financial basis. But they restrict themselves to certain lines which they have found to be profitable, and for the main part we must still depend upon wild drugs.

In the United States extensive experiments have been made in the growth of a few drugs by Johnson & Johnson, Eli Lilly & Co., H. K. Mulford & Co., and Parke, Davis & Co., which are admirably summarized in a paper presented at the last meeting of the Manufacturers of Medicinal Products by a member of this Association, Dr. Fred. B. Kilmer. Quite an extensive experiment was carried on by Johnson & Johnson in Castro Valley, Alameda Co., California under an arrangement with Prof. Albert Schneider, a report of which appeared in the proceedings of this Association for 1909. While this experiment was financially unsuccessful much valuable experience was gained for guidance of workers in this field.

Quite extensive experiments are being carried on at Glenolden, Penna., by H. K. Mulford & Co., who have about two hundred acres there devoted to experimental drug farms. Last year their crop of cannabis yielded a very high proportion of active drug. The plant seeded itself where it had been stacked and in June I saw a number of volunteer plants growing there that were four feet tall and most promising in appearance. The experience of H. K. Mulford & Co., with this particular plant coincides I believe with that of the Department of Agriculture. In point of physiological activity the American grown cannabis compares quite favorably with that grown in India and there would seem to be no occasion to recognize two separate drugs in the forthcoming Pharmacopœia.

Drug culture, however, needs to be supplemented with a vigorous campaign of education as to the collection of drugs now growing wild in our fields and forests. Unfortunately the monetary returns for the individual collector are not so promising as to lead any large number of collectors to devote their exclusive attention to this work. If we could have some assurance of a continuation of the relatively

high prices now commanded by indigenous drugs, the supplies of which have hitherto been drawn from Central Europe, we might induce many to help in the solution of this problem. But we have no assurance that an unexpected termination of the war may not throw on our market an abundance of these drugs at such low prices as would spell ruin to the American collector.

We have, it is true, several firms which have been busy in this field for years. Two of these located on the Atlantic slope of the Allegheny Mountains collect a very wide range of indigenous drugs and the supplies which they have furnished have been an important factor in filling the needs of our manufacturers. The world's supply of cascara sagrada is drawn from the Pacific slope. There are a number of drugs grown in other sections and hitherto uncollected in any considerable quantity, the collection of which would be most helpful to the drug market and which ought to yield a fair profit to those who undertake it.

A note of warning has been sounded by Dr. W. W. Stockberger, physiologist in charge of drugs and poisonous plant investigation of the United States Department of Agriculture against the anticipation of excessive returns from the growth or collection of medicinal plants. He rightly accentuates the need of a broad scientific knowledge of materia medica as the basis for a successful venture in the growth and collection of drugs.

It is not alone in drugs of botanical origin that we have suffered a shortage. Our most marked shortage indeed has been in those numerous and expensive chemicals derived from the coal fields. When the price of toluol was only 17 cents a gallon the coke furnaces of Western Pennsylvania found it more economical to burn the gases produced in coke making than to collect them and make further use of them, but when the supply of these products from Central Europe was shut off and the price of tuluol rose to $6.00 per gallon instead of 17 cents, and even at this high price, it was obtainable only in small qantities and with difficulty, the manufacturers of coke began the reconstruction of their furnaces so as to save and utilize the volatile constituents heretofore wasted. But this reconstruction on a large scale is time-consuming as well as expensive, and while we hear of numerous large plants now in course of construction in which all the volatile constituents of the coke industry will be made use of, yielding an abundant supply of the basic materials from which carbolic acid, salicylic acid, and aniline colors and the synthetic chemicals generally are made, the actual production of this basic material on an adequate scale is still some months off and in the meanwhile there will be an increasing scarcity and a continuation of high prices for this entire class of chemicals.

The marvelous effectiveness of the technical industries in Germany, the independence which this has given Germany of the remainder of the world in time of war and the profit this has yielded in times of peace furnish a lesson by which our own industries may well profit. Just after the passage of the tariff bill and only a few months before the outbreak of the European war one of our American manufacturers threw into the scrap heap a plant for the manufacture of chloral hydrate which cost him $25,000.00. Had this plant been in operation when the European supplies were shut off, its products would have yielded a handsome profit on the investment and would have saved the retail druggists of the country many thousands of dollars by keeping down the price of this important drug to reasonable limits.

In this case as in the case of many other drugs which have been affected by the war, the retail druggists, the dispensing pharmacists have been called upon to foot the bill.

By common consent a certain range of prices has been established for prescriptions which afforded a reasonable, but not an excessive profit, so long as the range of cost of the ingredients was within the usual limits. Comparative survey of the price quotations on the first of June, 1914, and the first of June, 1915, shows an

enormous increase of cost in precisely those drugs which are most largely used in prescriptions. Many of these prescriptions are repetitions. The prices of these had already been established and the patron who is called upon to pay a higher price when the prescription is renewed than when it was first put up becomes at once a disgruntled customer. No matter what explanation is offered, no matter how convincing the arguments put forth in justification of the advance, the attempt to change the price leaves a sore spot and is likely to cause the loss of the patron. Unless there is some general and concerted action by the entire retail trade in the matter of prescription prices we are in but little better position when it comes to increasing the price on new prescriptions to meet the increased cost of ingredients. It is essential that the public as well as the physician and the pharmacist become acquainted with the true condition of affairs regarding the increased cost of drugs that there may be no ill feeling over this increased cost and that it may be understood that it is the exigencies of war and not the whim of the dispenser which has caused the increase in the cost of prescriptions.

THE MILITARY PHARMACIST.

Regardless of one's sympathies the whole world stands impressed and even amazed at the marvelous perfection of organization and preparation displayed by the German army. In one phase of this organization we as pharmacists are particularly interested; that is the organization of the medical supply service. The American Pharmaceutical Association has since 1903 taken an active interest in the status of the pharmacists in the Government service. Our standing committee on this subject has done excellent work in directing the attention of the authorities to the injustice done to pharmacy, to medicine and to the rank and file of the army by the present organization of the medical supply service. Largely through the efforts of this committee a marked improvement has been brought about in the status of the pharmacists in the navy and in the public health service. Unfortunately our efforts in the army have not been equally successful.

A study of this situation covering many years, including close personal observation in the concentration camp of the New York National Guards at Hempsted Plains at the beginning of the war with Spain, and at Montauk Point when 25,000 regular troops comprising practically the entire mobile forces of the regular army who had fought through the Spanish war, returned from Cuba, has convinced me that however praiseworthy our efforts they have been misdirected. I am confident that had we devoted the same amount of effort to the creation of a wholly new medical supply service in the army which has been devoted to improving the status of the present hospital stewards we should have had substantial results from our efforts.

The opposition on the part of the members of the medical corps of the U. S. Army to the proposals which have been made by our committee from time to time have been, and will be, sufficient to prevent any material change in the status of the hospital steward. What we must do is to propose a plan for the reorganization of a new medical supply service which without a revolution in the relations existing between the medical office and the hospital steward will relieve the medical corps from some portion at least of their pharmaceutical and analytical and sanitary duties. The purely medical and surgical functions of the medical officer are sufficiently urgent to monopolize his attention. The administrative features of the medical service must also be left in the hands of the medical officer subject always, to a certain supervision on the part of the line officers. In considering military organization we must remember that the principal duty of a soldier is to fight. Consequently the fighting force must have precedence in all things. The commands of a line officer must be paramount in the face of the enemy. In purely sanitary matters, however, the medical officer should have more authority than

he now has. In the clash between the authority of the line officer and of the medical staff, which occurred in the Chickamauga Camp during the war with Spain, the line officer was so bent upon demonstrating his precedence that he ignored the advice of the medical staff and as a consequence hundreds of young Americans lost their lives through typhoid infection which would undoubtedly have been avoided had the medical staff been in a position to give orders instead of advice. But the history of our civil war, the history of our war with Spain and the history of the British forces now being made, demonstrates clearly that the medical supply service, to be efficient, should be in the hands of highly trained pharmaceutical specialists rather than in the hands of medical men detailed for this particular department aided by hospital stewards, the very character of whose attainments renders it unlikely that they will be competent to assume the larger tasks requiring the wider vision and higher technical training which would fall to them in case our army should be placed upon a war footing.

It is a significant fact that in all the standing armies of Europe and in the Japanese army the organization of which is modeled closely on that of Germany, the medical supply service is in the hands of highly trained pharmaceutical experts whose pay and rank is sufficient to attract to the service men of the highest scientific attainments and executive ability. It seems inconceivable that the United States and Great Britain should fail to profit by the experience and example of those nations which have had the best opportunity to study and solve the military problems and which have brought to the solution of those problems the highest technical skill and training. Notwithstanding the opposition of our own medical corps to the proposal to introduce highly trained pharmaceutical experts into the army service and intrust the medical supplies to these experts, I received the intimation some few years ago from a medical officer in close touch with the situation in Washington that there might be use found for the services of half a dozen such experts. The objection raised by the military administration to the proposal to introduce such a corps of experts with commensurate rank and pay is based upon the general objection felt by the military service to the creation of separate corps of commissioned officers whose promotion is restricted within the corps. From an administrative point of view such arrangements have been found objectionable.

Such purely technical objections can not appeal to any pharmacist who has had an opportunity to observe the confusion, the waste of effort and material and the inefficiency in meeting emergencies manifested by the medical supply service of the United States Army in our civil war and the war with Spain. Much of my criticism of this service is based on hearsay and it may be unfair, but insofar as the conditions which existed in the concentration camp of the National Guard of the State of New York at the outbreak of the war and in the camp at Montauk Point at the close of the war, I speak with a personal knowledge in saying that those conditions were not such as would have existed in a properly organized medical supply service. The criticism which I have to make of this service as at present organized is its lack of elasticity and failure to make adequate provision for the sudden enlargement of the army which must take place at the outbreak of a war. The severe criticisms which the British pharmaceutical press are now aiming at the medical supply service of the British troops are precisely those criticisms to be anticipated of our own troops in a similar emergency. For the welfare of the soldiers, for the efficiency of the service and for the honor of pharmacy I deem it essential that our medical supply service be reorganized somewhat along the lines followed by Germany, France, Italy and Japan, and recommend that the committee on the Status of the pharmacists in the government service direct their efforts toward the creation of a new corps along these lines, but without relaxing their efforts on behalf of the hospital stewards.



The above picture was taken in front of the Civic Auditorium in San Francisco of members in attendance at the Sixty-third Annual Convention of the American Pharmaceutical Association. Another picture was to have been taken of those in attendance and to have been designated the official picture; however, this did not materialize, hence the instructions were that the above be designated the official one.

PHARMACEUTICAL EDUCATION.

The history of pharmaceutical education parallels that of other callings which have passed by gradual development from the category of a trade into that of a profession. Just as the barber-chirurgeon has by almost insensible gradations developed into the ultra scientific Fellow of the American College of Surgeons, so the druggist is gradually being evolved from the grocer-apothecary of the middle ages into an educated, broadly trained scientist, expert in the use of the microscope, accurate in analysis, and thoroughly conversant with the great basic truths on which all scientific advance is based.

It is true that the commercialization of pharmacy is bewailed from the house top, the good old times of the apothecary mourned for and the present and future of our calling given up as hopelessly sordid and irretrievably venal. Every age has had its Jeremiahs who have condemned the present and bemoaned the past, but, notwithstanding these Jeremiads the race has developed and progressed, attaining heights of scientific knowledge, and technical skill hitherto undreamed of. So too the philosophical eye can discern tendencies in existing conditions which give promise of better things for pharmacy. Of different things, it is true, and by many utterly condemned merely because they are different, but on the whole, better things beyond question.

The pharmacist of olden times and indeed of recent times was a jack-of-all-trades. He garnered his herbs, he cured them, he ground them up, extracted their virtues by maceration or percolation and eventually dispensed his fluidextracts or tinctures on prescriptions. He laboriously pounded compound cathartic pills, he spread plasters on leather, he triturated mercurial ointment until the mercury was extinguished, and in short conducted a pharmaceutical laboratory on a small, even a minute scale. He also sold a few patent medicines and a great many herbs and household remedies. He was busy in a leisurely kind of way and he had so wide a margin of profit that though the aggregate of his receipts was modest, his net income was satisfactory for a person of his modest desires. All this has been changed. He can no longer afford to gather his own herbs, to make his own compound cathartic pills, and to triturate his own mercurial ointment. These things are done as well or better, and very much more economically by highly trained specialists provided with all kinds of ingenious labor-saving machinery. The margin of profits on his sales have been gradually diminished until he must sell very much more in order to make even so modest a livelihood as would have contented him in those good old days before the need for a victrola and an automobile arose to increase the cost of living. The advent of serum therapy bringing into the field of materia medica a wholly new line of products which the pharmacist could not possibly prepare himself, has still further removed him from the category of manufacturer.

All this has made it necessary for the pharmacist to be very much more of a business man and a merchant than ever if he is to survive in the keen competition with which he is surrounded. We therefore see the introduction into the curriculum of the more progressive institutions of courses of instruction in business methods and in accounting. When the way is led in this by such institutions as Harvard University, there is no occasion whatever for the teaching faculties in pharmacy to shy at the introduction of this commercial instruction into what the faculties would no doubt like to make a purely scientific course of instruction. It has seemed to me that many teachers have misinterpreted the true significance of the words "scientific" and "commercial." They look upon the two as being in direct antithesis. They have not realized that there is a science of commerce. They have failed to grasp the opportunity which has presented itself of applying scientific methods to commercial pursuits. With the advent of the laboratory of psychology came an awakening to the fact that so apparently abstruse a study as this had a bearing upon the practical affairs of the commercial world. The studies

carried out in the psychological laboratories of Harvard University, of Columbia University, and of other institutions, regarding the response to different forms of advertising, the records made of these observations, and the deductions drawn from them have shown that in so material and commercial a field as that of advertising the application of scientific methods furnishes valuable information. The establishment of a post graduate school of business administration at Harvard University has demonstrated that it is possible to carry scientific methods into business life. It is most important that the teachers in pharmacy take cognizance of the awakening on the part of the greater Universities to the necessity of adjusting the curriculum to the needs of the student.

Our entire educational system is a survival, with slight modifications, of the classical methods of the middle ages, when the whole of culture was embraced in literature and art. The manifold demands of science and of commerce have been met grudgingly and some concessions have been made from the medieval methods, but without that complete revolution which is needed to adjust our education to the needs of the student. The wonderful effectiveness shown by the German people in the present struggle is an evidence that the careful preparation of the individual along highly specialized lines is productive of the best results in the effectiveness of the nation as a whole. In America we have followed the German methods to a certain extent but our methods of instruction have been modified materially by the cultural methods of the English Universities, where the traditions of medieval culture are still strong. The reform in our system of education must begin in the grammar school. The curriculum of the grammar school is now adjusted with a view to preparing the pupil to enter high school. But statistics show that only eight to ten percent of grammar school pupils ever attend the high school at all. The result is that ninety of the pupils are made to adjust themselves to a course of study suitable to only ten of their number. We must, it seems to me, begin the differentiation between the probable high school pupil and the pupil who will go no further than the grammar school. We should have elective courses in the grammar school which would fit the pupil for trades. Our high school curriculum is predicated largely on the supposition that all the high school pupils are to go through a college of arts. But only some fifteen percent of the high school graduates do pursue the arts course in higher schools of learning. How absurd therefore it seems to condemn all high school graduates to take a course of instruction which is only suitable for fifteen percent of them.

I am aware of the fact that educators deprecate the efforts to make their courses of instruction practical, but the increasingly severe demands of commercial competition make it necessary that the young man entering into any career be especially fitted for that career if he is to survive in it. The marvelous spread in scientific knowledge over wider and still wider areas makes specialization increasingly necessary. When the scientific knowledge of the world could be condensed into one volume it was possible for a really great mind to compass the whole field of knowledge. But with the increasing breadth of the horizon which comes with our rise in the scale of scientific knowledge, specialization becomes essential. It requires the genius of an Edison or a Thomson to cover the field of electricity alone and we must therefore be content to teach all our pupils, only the basic generalities of science and begin specialization at an early stage. The pharmacist of fifty years ago might hope to gain a fairly adequate conception of chemistry, of botany, of materia medica and of pharmacy as they were then known, in a two years' course at college supplemented by adequate training. Now that the fields of each of these departments have been so widened, the two years' course can only give a rudimentary knowledge, leaving to subsequent instruction the highly specialized aspect of all these branches of which the pharmacist must have some knowledge.

ENDOWMENTS.

When the two year course sufficed, the unpretentious colleges of pharmacy founded by and conducted by pharmacists were able, even with the slender means at their disposal, to give fairly adequate instruction. The increasing complexity of pharmacy and the consequent demand for more instructors and more equipment are beginning to make it impossible for the school of pharmacy to furnish the necessary equipment and instruction without some addition to their income from the fees of students. This fact has been recognized in the schools attached to the State institutions whose expenditures are much in excess of their receipts from fees. Only one or two of the larger institutions conducted independently, have been so fortunate as to receive bequests which give them assurance of an independent income to supplement that derived from fees. There has been a lamentable lack of public spirit shown by men who have made fortunes in pharmacy, or at least in the drug business, in so far as pharmaceutical endowments are concerned. The only large bequest ever made to the cause of education in pharmacy came to the Massachusetts College of Pharmacy from the estate of Mr. Weeks, through the influence of our former Treasurer, Mr. S. A. D. Sheppard. Frederick Stearns has maintained a fellowship at the School of Pharmacy at the University of Michigan. The late Albert Plaut, an honored member of this Association only a few months before his death, established a fellowship at the College of Pharmacy in the City of New York, in memory of his talented father, Isaac Plaut, who was one of the best informed men regarding the characteristics and qualities of botanical drugs of his time, and whose visits to the store in which I was a clerk were more welcome and more profitable than hours of study in pharmacognosy at the college. The memory of George Seabury, for a long time an active member of the American Pharmaceutical Association, has recently been perpetuated by the foundation of a Seabury scholarship in the College of Pharmacy in the City of New York by his nephew, Dr. Henry C. Lovis, who is also a member of our Association.

These so far as I can recall are the most important and the only large endowments which have been bestowed on pharmaceutical education in the United States. We have also several scholarships providing sufficient funds for the payment of the college fees and as a beneficiary of one of these at the Philadelphia College of Pharmacy I can testify to the value of such scholarships.

Great Britain has the Bell Scholarship and also has the Fairchild Scholarship, which was established in 1904 by Fairchild Bros. & Foster, who are members of the American Pharmaceutical Association, and which is open to any apprentice or assistant of either sex, preparing to qualify under the British Pharmacy Act of 1868, or the Pharmacy Act of Ireland of 1875. This scholarship is intended to encourage study during the period of apprenticeship and thus facilitate and enhance the chances of success of the diligent student on entering for the qualifying examination.

One scholarship of the value of fifty pounds, tenable for one year, is awarded as the result of an examination conducted simultaneously at London and Manchester, England; Dublin, Ireland; Edinburgh, Scotland; Cardiff, Wales, usually during the last week of June, so that the Fairchild scholar may be able to commence his studies in the coming winter session.

The Fairchild scholar may select any well-known school or College of Pharmacy, or any other well recognized educational institution where pharmaceutical subjects are taught, to meet the requirements of the syllabus of the Pharmaceutical Society of Great Britain or Ireland where he proposes to study for the qualifying examinations.

The deed of gifts provides that college fees and expenses shall be paid, and what is over will be paid to the scholar for maintenance during the school period, by the principal of the school on behalf of the founders.

The scholarship is in charge of a Committee of Trustees, all prominent in pharmaceutical affairs, one from each of the cities where examinations are held, and of a permanent secretary, Mr. A. E. Holden, the London representative of Messrs. Fairchild Bros. & Foster.

FAIRCHILD AMERICAN PHARMACY SCHOLARSHIP.

In discussing the financial problems which confront the student of pharmacy recently with Mr. Samuel W. Fairchild, of Fairchild Bros. & Foster, who was for some years president of the New York College of Pharmacy, Mr. Fairchild expressed his appreciation of the need for encouraging the student in pharmacy. His experience of the operation of the Fairchild scholarship in Great Britain has convinced him that aid extended to the student at the beginning of his student career was an important and frequently a determining factor in the student's life. So much impressed has Mr. Fairchild been with the need of encouraging the pharmaceutical student that he has given me permission to announce the establishment of a Fairchild scholarship in the United States to consist of the sum of $300 which he will provide annually for some deserving student, to be selected by a Commission composed of the President of the American Pharmaceutical Association, the President of the National Association of Boards of Pharmacy, the President of the American Conference of Pharmaceutical Faculties and the editor of the Journal of the American Pharmaceutical Association. Mr. Fairchild imposes no restrictions on his munificent gift and authorizes me to say that the details for the award of the scholarship will be left to the discretion of the Commission. It is naturally understood, however, when this Commission elaborates its plans Mr. Fairchild would like to have an opportunity of reviewing them.

I have not been able to devote as much time and thought to the affairs of the American Pharmaceutical Association during my term of office, as I should have liked to do. I have done, however, the best that I could do within the limits of my ability and of the time at my disposal, but however derelict I may have been in the routine duties of the presidency, this generosity on the part of Mr. Fairchild enables me to point with pride and satisfaction to at least one phase of my administration, for I am sure that this generous provision placed as it is in the hands of the national body of pharmacists, will not only prove of great value in encouraging the fortunate recipients to pursue their studies, but will serve as an example for others, who like Mr. Fairchild, have attained financial success in the field of pharmacy, to give substantial and public acknowledgment of their sense of obligation to pharmaceutical education, by making substantial gifts to the cause. On behalf of the American Pharmaceutical Association, on behalf of the cause of pharmaceutical education, and on behalf of those ambitious young men whose paths towards higher educational equipment will in the future be smoothed by Mr. Fairchild's bequest, we should thank the donor for his liberality and I recommend that a committee be appointed to draw up and present to Mr. Fairchild a suitable and formal note of thanks.

PRESIDENT MAYO'S RECOMMENDATIONS.

The address contains six recommendations:

1. That all unnecessary ceremonial addresses and replies be eliminated from our proceedings.

2. That the committee on by-laws be instructed to present for consideration amendments to the by-laws providing the minutes of the Council shall not be read in the general session, but that the acts of the Council be outlined, and that on demand of any two members full information regarding such action shall be presented to the general session and that acts of Council shall be subject to review by the general session.

3. That the incoming President be instructed to appoint a committee of fifteen on the cultivation and collection of botanical drugs with a special view to encouraging the cultivation of indigenous drugs now going to waste.

4. That the Committee on the Status of Pharmacists in United States Government service be instructed to draft and seek the passage by Congress of a bill providing for the creation of a corps of highly educated expert pharmacists, whose duty it shall be to direct the medical supply service of the United States Army, and to continue their efforts toward the betterment of the status of the men now in the service.

5. That a committee be appointed by the President to draft and present to Mr. Samuel W. Fairchild, suitable resolutions of thanks for his generosity in having established an American Scholarship of Pharmacy.

6. That the General Secretary be instructed to lay the plan of associate members of the branches before the officers of the branches instructing them as to what steps should be taken by any branch desiring to provide for associate members.

Vice-President Gietner then said:

Ladies and Gentlemen: Mr. Mayo is so well known that it is almost useless for me to say that he has again given us something abounding with the eloquence so peculiar to him; the present address, the one just delivered is no exception. It is now before you. What disposition do you desire to make of it?

Dr. H. M. Whelpley then moved that the Vice-President appoint a committee of five to consider the President's address, adding that if he might be permitted he would suggest that he be not named on the committee; motion seconded and carried.

The Vice-President then gave out the following as the personnel of the committee of five to consider the President's address:

Messrs. Osseward, Thiesing, Cousins, Godding and Nitardy.

At this juncture President Mayo resumed the chair and stated that the next business before the session would be the reception of delegates, asking Secretary Day whether he had any such credentials.

Secretary Day then announced that he had the credentials from the delegates of six national organizations, reminding the chair that it had been customary to have those delegates present the greetings of their respective national organizations, stating that the first among these came the American Medical Association; that Dr. Ray L. Wilbur was present as the representative of that great body and that he would present the greetings of the American Medical Association.

The statement of the Secretary was greeted with applause.

Dr. Ray L. Wilbur then came forward and addressed the Association as follows:

Mr. President and Members of this Association: I had assumed that Dr. Jones would represent the Association. I had no idea of appearing before you. I came largely to see something of your Association and have been very much impressed by the President's address, and also by the program which I have looked over; and before saying anything from the standpoint of the American Medical Association, as a San Franciscan I should also like to add to what the Mayor's representative has said: The hope that you will have a good time in San Francisco, and that you will call freely on any of us here for anything that we can do.

The American Medical Association has taken a tremendous amount of interest in the same sort of thing that this Association has been organized for. I think that if you watched all its activities during the last few years you are bound to see that

the best things your Association has stood for, the American Medical Association has been and is working for.

There has been a very careless period, especially from the standpoint of the physician, regarding pharmaceutical preparations and all things of that connection, but I think I can safely say that the medical profession is fairly aroused, and I think much of the credit belongs to your Association.

So, in the name of the American Medical Association, I should like to thank the faithful officers of your own Association for its services to the public and the medical profession along those lines.

Secretary Day then announced Messrs. William C. Anderson, Louis Emanuel and Frank T. Green as delegates of the National Association of Retail Druggists, inviting Dr. Green to speak for the delegation.

Dr. Green addressed the convention as follows:

Ladies and Gentlemen: Once again a few words from me as chairman of the delegation to greet the American Pharmaceutical Association on behalf of the National Association of Retail Druggists.

It was six years ago when the great fire swept this peninsula leaving ruin in its path.

Our city in its sorrow was aided by many generous donors.

The National Association of Retail Druggists gave forty thousand and six hundred dollars to aid druggists and their clerks.

Those clerks who were unfortunate were helped in their efforts to establish their homes.

Those druggists who lost their stocks were materially aided in establishing themselves in the drug business.

"Lest we forget, Lest we forget." The generous aid of the National Retail Druggists Association extended to the California druggists, (applause) you will remember they gathered a fund of over forty thousand dollars, as I stated, and sent it to our stricken city. They appointed a committee to dispense those funds. One of the first things done was to fill the needs of those who needed it; money was given immediately and freely, and done after one or two days' organization, and all over the coast, particularly around the bay cities.

Not alone was money given to these people but money also was advanced to them in the shape of notes approximating thousands upon thousands of dollars so they could start again along the lines of helpfulness to a grateful public and the people of California.

I can assure you that as a delegate of the National Association of Retail Druggists it gives me great pleasure to add my word and to take part in this meeting of the American Pharmaceutical Association. (Applause.)

The Secretary then explained that five delegates had been named as representatives of the National Wholesale Druggists' Association, asking whether any of the gentlemen were present in the assemblage, that the Secretary had not as yet met any of them and was therefore not able to call on any of them in particular, but there was no response.

Secretary Day then suggested to President Mayo that the delegation of the National Wholesale Druggists' Association be passed for the present, with the statement that the convention would receive these greetings at a later session.

The Secretary then announced that Dr. A. R. L. Dohme had been designated as the representative of the National Association Manufacturers of Medicinal Products.

The Secretary announced the delegation of the National Association of Drug Clerks as follows: P. A. Mandabach and P. F. Coffey.

Secretary Day stated that he had seen neither of the gentlemen at the session, and the presumption was that they were not present.

The Women's Organization of the National Association of Retail Druggists was then announced, and Secretary Day stated that he had a letter and also credentials from that organization; that the credentials were those of Mrs. J. L. Lemberger, Mrs. Louis Emanuel and Mrs. William C. Anderson.

The Secretary then proceeded to read a communication signed by Mrs. Nellie Florence Lee and Mrs. Fannie E. MacBride, respectively Secretary and President of the Women's Organization, National Association of Retail Druggists:

William B. Day, Secretary, American Pharmaceutical Association:

Dear Sir: The Women's Organization of the National Association Retail Druggists extends most cordial and sincere greetings to all members assembled in convention.

"May every hope be realized—
And when the year is closed—
All records made—the last deed done—
The last words said, and memory alone remains—
Of its joys, its griefs, its failures, its gains,
May all present, with purpose full and clear
Turn with new courage to meet the coming year."

After the reading of the communication, Secretary Day stated that he knew that it would be very agreeable to the Association to hear one of the ladies representing the National Association of Retail Druggists address the American Pharmaceutical Association in welcome, and he took great pleasure in introducing to the convention Mrs. Louis Emanuel, as representative of the Women's Organization of the National Association Retail Druggists, suggesting that it was hardly necessary that Mrs. Emanuel be introduced to anyone who has attended the meetings of the American Pharmaceutical Association in the past, because Mrs. Emanuel was so well known socially and Mr. Emanuel was so well known in legislative circles, but that it was with rare pleasure he introduced Mrs. Emanuel who would say a few words on behalf of the Women's Association.

At this juncture Mr. Emanuel arose and said:

"I happen to be Mrs. Emanuel's worser half," and she talked so much on the way coming to San Francisco that she has exhausted her vocabulary. She asks to be kindly excused. (Laughter.)

The President then responded to the greetings of the American Medical Association, stating to Dr. Ray L. Wilbur that it afforded the President great pleasure to welcome him on behalf of the American Pharmaceutical Association; that the objects of both organizations were practically identical; that both served the cause of medicine, and that there was no question but what the aspirations of both organizations were of the highest, and that it was a great pleasure to have Dr. Wilbur in their midst and to have him participate in the discussions of the convention.



Some members of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties in San Francisco.

In response to the greetings of the National Association of Retail Druggists as enunciated by Dr. Green, President Mayo said:

Mr. Green, we know we will have you with us; you are one of us. It is hardly necessary to say a word of welcome to you, but your reference to the National Retail Druggists Association's fund donated to this grief stricken people is a very touching tribute and shows you appreciate the generosity of your fellow citizens.

It is hardly necessary to give you welcome; we shall be glad to have you take active part in all the Association's work.

The Secretary then announced that there were also representatives from various departments of the National Government; the Bureau of Chemistry was represented by Mr. Edgar O. Eaton, attached to the Bureau at San Francisco.

Secretary Day then stated that Pharmacist R. F. Troxler, from the Bureau of Public Health Service, had been delegated as a representative of that department.

Pharmacist R. F. Troxler responded with the following address:

Mr. President, Ladies and Gentlemen: I have been detailed by Surgeon General to represent the United States Public Health Service at this meeting.

My interpretation of those orders is that I am here not so much to enter into deliberations of this body as to observe and report upon the proceedings.

At this, my first detail, my first meeting of this Association, I hardly know what my duties are to be; but I want to assure the American Pharmaceutical Association of the continued co-operation of the United States Public Health Service in the scientific work in which the Association is constantly advancing.

Through our hygienic laboratory we have lent some aid to the Scientific Section of this body and I assure you the services of that laboratory will always be at your command. I thank you. (Applause.)

Professor Lloyd then addressed the chair as follows:

"Mr. President, we have with us a gentleman who has done so much for the benefit of pharmacy in the western states and has been so long active in the evolution of the higher art and work and has so helped us in our work, that I would ask you, my friends, as a favor, if we cannot hear from Dr. Dawson, just a word.

Professor Lloyd's statement was applauded.

The chair then asserted that he took great pleasure in introducing Dr. Dawson, Local Secretary of the American Pharmaceutical Association, whose good work had been vouched for by one of the highest authorities, Professor Lloyd of Cincinnati.

Dr. Dawson responded as follows: I had hoped that I would not be called upon. While I had my credentials in my hand I forgot to give them in until a few moments ago. And now Professor Lloyd has called on me, virtually caught me, and I am nonplussed for the moment.

I am not prepared to respond with an extended speech. I see among you here many old friends, and it gives me pleasure to greet them here in California; it makes me almost young again to see how time has dealt with them, not only in their appearance but reputation. I am glad to meet and welcome them here. (Applause.)

The Secretary then advised the chair that there was yet one more department of the national government to be represented; a very important department, too, because under its direction were a very considerable number of members, namely, the War Department; that the members to represent this department were Messrs. James Ferris Hamner and Samuel J. Harris.

President Mayo then asked whether either of these gentlemen were present, whereupon Sergeant Hamner responded and said:

Mr. Chairman, Ladies and Gentlemen: Unfortunately, we of the War Department are not allowed to criticize the acts of our superiors. You gentlemen are not subject to the articles of war and can criticize as much as you please their good judgment or lack of it in appointing me as representative of the medical department; feeble though I am, before this session is over, before this meeting is over—at one of the sections, I rather expect to make myself heard from.

For today all I will say is that for and in the name of the Surgeon General of the Army, the War Department extends you cordial greeting. (Applause.)

Secretary Day then suggested to the Chair that he had but one more communication in the matter of greetings; that he thought there was a probability of the members present being willing to give a few minutes to having one letter read, a letter from their old friend and fellow member, Francis B. Hays; the Secretary stated that he had written Mr. Hays expressing the hope that he would be able to attend this convention.

The Secretary then read Mr. Hays' reply in which he said that he was much pleased to hear from Secretary Day; that Mr. Hays' general health and strength were as good as he had any reason to expect; that his only serious trouble was with his eyesight which did not seem to improve materially. That it did not seem likely that he would ever again be able to fill a journalistic position, which he regretted, because not only did he enjoy the work, but it brought him into such pleasant relation with a lot of mighty good fellows. That he felt sure "the boys" would have a good time at the San Francisco meeting and that he would like to join them and "give a hand" to a fellow editor when he delivers his presidential address.

The chair then called for further communications and Secretary Day stated that there were none, but that the next order of business would be the reading of the minutes of the Council by the Secretary of the Council, but since these had already been published in the Journal, the reading might be omitted. It was regularly moved and seconded that the reading of the minutes of the Council be omitted; carried.

President Mayo then announced that the next order of business was the reports of special standing committees; that the committees would be called for by name; that this order of procedure be followed merely with a view to prompting the members and the chairmen of the several committees, to impress upon them the necessity of having their reports ready, after which they would be formally called for at a later session.

Secretary Day then suggested that a number of the reports were already in the Secretary's possession, the chairmen not being able to be present; that others were presented at the council meeting, and that several were presented at the meeting then in progress, and stated that it was his belief that considerable time would be conserved and it would be sufficient to merely make a general announcement that all the committee reports would be presented at the second general session, but were to be in the Secretary's hands on the evening of Monday, August 9. That the chairmen of the special committees, as well as standing committees present who had their reports ready might either give them to the

Secretary at the close of the meeting now in session or at the Bellevue Hotel on the evening of Monday, August 9. The Secretary stated the reports of the committees would be called for by the chairmen at the general session on Tuesday morning, August 10, at the Bellevue Hotel.

The President then stated that if there was no objection the matter would be closed and dispensed with after the closing of the present business in hand..

President Mayo also announced that the next order of business would be the calling of the roll of states, territories, provinces, and that after the roll call there would be a recess of ten minutes for the election and selection of the representatives on the nominating committee.

Secretary Day then stated that inasmuch as each state was entitled to two members on this committee and that five were to be appointed by the President, that it occurred to the Secretary he could save considerable time by calling the list of states, because it was quite likely that some of the states would not be represented here. That others would not be represented by more than one, while others would have one or two members, but that in the latter cases it was his thought that the convention could make the selection at the present time. The Secretary further stated that if the state had more than one member, either one of those members might serve, whereas if there were more than two, the members from such state would be required to caucus with a view to filling the membership.

The chair then stated that he thought it would be better to pursue the regular course; that there might be some misapprehension owing to the fact that some members of a state present might not be aware of the fact that other members were present, and that that would take some time.

Secretary Day then asked the chair whether the Secretary proceed with the calling of the roll, which President Mayo requested be done.

Before proceeding with the calling of the roll, Secretary Day asked whether the chair wished the members to respond, whereupon President Mayo stated that he thought it would be better to dispense with the calling of the roll.

A delegate arose and suggested that he was about to make a motion which called for the dispensing of the calling of the roll at that time, in lieu thereof moving that an adjournment be taken for ten minutes, after which the roll call be taken.

It having been regularly moved and seconded that this procedure be followed, the same was so ordered by the chair.

President Mayo then said: As we adjourn, the representatives from each of the states will assemble in groups and select the men who will appear on the committee.

Professor Lloyd then said: I rise to make a few remarks in regard to Professor Wenzell.

I regret that the time is passed for such a statement, but if you will indulge me for just a few moments, just before we take the recess, I shall be glad to be permitted to say that Professor Wenzell, of the California College of Pharmacy, professor of chemistry, was to have been with us today. He looked forward with great anticipation of pleasure in being here, but he has been called away, and I therefore request that a note be made upon our record to this effect.

Mr. Dawson requested me to make this statement, as he is modest and I am not; he asked me to make the few remarks about Professor Wenzell and the

great regard in which he was held, and to express the regret of the California delegates that he is not with us. I simply wanted to make the request so it will go in the minutes, and I know it will be appreciated.

President Mayo then stated that a tablet commemorative of Professor Wenzell was then in course of preparation; that its presentation was anticipated at the meeting then in session, and that it still might be made ready to present at the meeting before the final adjournment.

The chair stated that he was sure that the convention recalled with great regret the loss of two such members as Professor Wenzell and Professor Searby since the last meeting in California.

President Mayo also said that he had the pleasure of seeing in the Greek Theater a memorial chair to Professor Wenzell; and that this Wenzell memorial would be opened before the convention left the city.

The chair then put the formal motion to take a recess of ten minutes in order to select the Nominating Committee, which, on motion regularly made and seconded was declared carried.

After the ten-minute adjournment President Mayo called the convention to order, stating that the convention would again resume the regular order of business, which was the reading of the roll call with a view to getting the nominations for the committee on nominees; and suggested that as the Secretary read the name of the state the members or representatives of that state would please name the two men who were to represent that state on the committee of nominations.

Secretary Day then read the roster of states, and the representation was made up of the following:

For California—J. H. Dawson and H. V. Becker.
For Colorado—Wm. Beukma and F. W. Nitardy.
For Illinois—Wm. B. Day and Dr. J. H. Long.
For Indiana—Professor W. O. Speer.
For Iowa—Gus. Scherling and Miss Zada Cooper.
For Kansas—J. S. Chism.
For Kentucky—O. C. Dilly and J. W. Gayle.
For Louisiana—Phillip Asher.
For Maryland—J. Fuller Frames and H. L. Meredith.
For Massachusetts—C. H. Packard and J. G. Godding
For Michigan—Wilbur L. Scoville.
For Minnesota—E. L. Newcomb and J. F. Wulling
For Missouri—Charles Gietner and Otto L. Claus
For Nebraska—N. P. Hansen and R. A. Lyman
For New Jersey—Charles Holzhauer and H. V. Arny.
For New Mexico—B. G. Dyne.
For New York—A. B. Huested and G. C. Diekman.
For Ohio—Azor Thurston and E. H. Thiesing.
For Oregon—C. M. McKellips and Adolph Zieffle.
For Pennsylvania—Julius A. Koch and L. Emanuel.
For Texas—C. Beukma and W. H. Cousins.
For Utah—J. M. Balden and J. C. Culley.
For Vermont—W. E. Terrill and W. F. Root.
For Virginia—W. F. Rudd and T. A. Miller.
For Washington—C. Osseward and A. W. Linton.
For West Virginia—S. M. Scott, Jr.
For the Association at Large—H. M. Whelpley, J. P. Remington, W. C. Anderson, F. T. Green and E. G. Eberle.

The Chair then inquired whether there was any incidental business to be presented and the Secretary stated that in connection with the appointment of the

nominating committee that a number of the members had spoken to the Secretary about their credentials, and that the Secretary would like to advise for the information of the members that it was not necessary to have credentials in order to serve on the nominating committee. Some seemed to carry that impression, but it was the desire of the Secretary to announce that credentials should be presented before the House of Delegates which met on the night of August 9, so the delegates accredited in those credentials might be eligible to vote in the House of Delegates; and the Secretary said that he wondered if it would not be better for him to read merely the names of the associations and not the names of the members that had presented the credentials, so that any who had not presented the credentials could be cared for between the time at which he spoke and the time the House of Delegates was scheduled to meet.

The chair then said that with that provision it would be understood.

The Secretary then read off the list of associations which had presented credentials:

Alabama, Arizona, Colorado, District of Columbia, Illinois, Kansas, Kentucky, Maine, Massachusetts, Minnesota, Mississippi, Nebraska, New York, North Carolina, Pennsylvania, Vermont, Virginia, West Virginia, Wisconsin, Ohio, Washington, Utah, Iowa, New Jersey, Texas, New Hampshire, Tennessee, South Carolina, Maryland, California.

The Secretary then read the following list of colleges of pharmacy from which he held credentials:

Birmingham, California, University of Southern California, National College, Northwestern University, Valparaiso University, State University of Iowa, Louisville College, University of Maryland, Massachusetts College, University of Minnesota, New Jersey College, College of Jersey City, Albany College, Brooklyn College, Buffalo College, North Dakota Agricultural College, North Pacific College, Philadelphia College, Pittsburgh College, Medical College of South Carolina, Medical College of Virginia, University of Washington, University of Nebraska, St. Louis College, Ohio State University, University of Illinois, Columbia University.

Branches of the A. Ph. A.: Baltimore, Cincinnati, Columbus, New England, Northwestern, San Francisco, Chicago, District of Columbia, Nashville, Denver.

The Secretary then stated that there were also a few alumni associations, and enumerated them as follows:

The alumni associations of Massachusetts College, St. Louis College and Brooklyn College.

And the Women's Pharmaceutical Association of the Pacific Coast and New York Deutscher-Apotheker Verein.

Secretary Day also announced to the chair that in connection with the incidental business the Secretary would like to make one or two announcements.

Secretary Day said: In the first place, regarding a change in the program: After the program was printed we found it would be necessary for certain reasons to change the time of meeting for the joint session of the Section on Education and Legislation, Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy.

President Mayo stated that this could be found on page 9 of the program, under the date of Tuesday, August 12, opening right at the center of the program; the Chair further stating that that session which was announced for Thursday afternoon at 2 o'clock would be held on Wednesday morning, August 11, at 9:30, at the Bellevue Hotel, and the two separate sessions of the Section on Education and Legislation would be held on Thursday, one in the morning, the second in the afternoon.

The President then inquired whether there was any further general business, in reply to which Secretary Day stated there was none.

President Mayo then said: While the program provides that the Nominating Committee shall meet this evening, there will be time for it to meet immediately after the adjournment of this meeting.

On vote regularly moved and seconded, it was ordered that the Nominating Committee be called together immediately after the adjournment of the session then in progress; and the chair suggested that if they found they could dispose of the business they were at liberty to do so; if not, they could adjourn over to another time.

Secretary W. B. Day said he thought it a very opportune time to call attention to the fact that the convention was very anxious to elect its friends to membership as early in the convention as possible, and requested that if there were any persons present, pharmacists or men interested in pharmacy from any side who desired to join or take membership in the Association that the Association would be very much pleased to receive their applications at that time and promised that they would be acted upon promptly and so that the full privileges of membership and participation at the elections would accrue.

The Secretary also announced that the badges and bars might be had of the Secretary, the San Francisco bars and the gold badges of the Association; also, that the official pins, the Association pin or button might be procured of the Treasurer; and stated that there were two kinds of small buttons offered, one being a solid gold button which sold at a dollar, while the other was only partly gold, which sold at only 25 cents.

President Mayo then inquired as to whether anyone else had any incidental business to present, and there being no response, stated that a motion to adjourn would be in order, with the understanding that immediately after the adjournment of the session then in progress there would be taken up the call of the nominating committee.

It being regularly moved and seconded that the first general session adjourn, President Mayo declared the sixty-third annual meeting of the American Pharmaceutical Association adjourned until Tuesday, August 10, 9:30 a. m.

MINUTES OF PROCEEDINGS OF THE SECOND GENERAL SESSION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The second general session was called to order Tuesday, August 10, 1915, at 9:30 a. m., by President Caswell A. Mayo, in the main convention hall of the Bellevue Hotel, San Francisco, California.

The Chair then called upon the General Secretary to read the minutes of the first general session.

The Chair then inquired as to whether there were any corrections to note in the minutes of the first general session, and there being no response declared that they would stand approved as read.

President Mayo announced the names of the Committee on Resolutions as follows: William C. Anderson, John G. Godding, Henry M. Whelpley, Joseph P. Remington, James H. Beal, Otto F. Claus, William C. Alpers, Julius A. Koch, F. J. Wulling, Franklin T. Green.

The General Secretary then announced that he had one or two communications in the way of reports, but that there was one specific communication which he thought had better be read, a communication from Professor Wilbur J. Teeters, Secretary of the American Conference of Pharmaceutical Faculties.

President Mayo suggested that the communication referred to be read, which was done, and follows:

"Secretary Day: President Wulling in his address made the following recommendations which should be reported to the meeting:

The committee on President's address reported favorably, first, that a standing committee on higher educational standards be appointed by the President of the Conference to work jointly with similar committees of the American Pharmaceutical Association, National Association of Boards of Pharmacy, the National Association of Retail Druggists and State Associations, said committees to work with the parent Association as well as jointly.

Second, also that a special committee on federation of all pharmaceutical organizations be appointed.

Now, this would involve the appointment of two committees by the President of this Association, a committee on higher educational standards, and a committee on federation of pharmaceutical organizations, these committees to work with other similar committees of the other bodies."

The Chair then announced that the communication was before the session for disposition.

Dr. Philip Asher asked whether the Association had a right to appoint such a committee, and whether the communication should not more appropriately be referred to the House of Delegates and then referred back.

The General Secretary suggested that the communication was not a resolution.

Mr. Asher then desired to know as to whether such a committee was already in existence.

The Chair stated that the appointment of such a committee would require authorization by the Association; there would be a special committee appointed without direct authorization or perhaps a standing committee, that no doubt it contemplated a standing committee, but that if a standing committee were ap-

pointed it would require the changing of the by-laws, and that therefore in the opinion of the President it had better go to the Council, and then be referred to the Standing Committee on By-Laws.

Dr. Asher then stated that if he was in order he would move that the communication be received and referred to the proper committee.

Dr. Wulling then stated that he was glad that Dr. Asher had put it in that particular way, stating that he and his associates were trying to make the House of Delegates a good working body, and that he understood that the resolutions committee was the one to which the communication in question should go, and that the word "authorization" as used by Dr. Asher authorized the President to refer it to either the Council or House of Delegates.

The President then stated that it would be referred to the proper authorities, leaving it to the executive officer to determine.

Also, that the report of the Committee on Nominations would be the next order of business.

Secretary of the Nomination Committee F. W. Nitardy then stated that the Committee on Nominations met the day previous, after the first general session, and that the following nominations were made:

For President:

F. J. Wulling, Minneapolis, Minnesota.
Charles H. LaWall, Philadelphia, Pennsylvania.
C. H. Packard, Boston, Massachusetts.

For Vice-President:

Leonard A. Seltzer, Detroit, Michigan.
Alfred B. Huested, Delmar, New York.
C. W. Johnson, Seattle, Washington.

For Second Vice-President:

Charles Gietner, St. Louis, Missouri.
L. E. Sayre, Lawrence, Kansas.
Geo. H. P. Lichthardt, Sacramento, Cal.

For Third Vice-President:

Frank T. Green, San Francisco, Cal.
R. A. Lyman, Lincoln, Nebraska.
Philip Asher, New Orleans, Louisiana.

For members of the Council:

J. H. Beal, Urbana, Illinois.
Wm. C. Alpers, Cleveland, Ohio.
Wm. C. Anderson, Brooklyn, N. Y.
J. C. Diaz, Havana, Cuba.
W. H. Cousins, Dallas, Texas.
J. H. Dawson, San Francisco, Calif.
Harry B. Mason, Detroit, Michigan.
Albert Bolenbaugh, Richmond, Virginia.

Julius A. Koch moved that the report be adopted, the motion being seconded by W. H. Cousins, Texas, and the question being put, it was declared carried.

President Mayo stated that these names would be placed upon the ballot to be submitted to the members by mail.

The Chair then announced that the next order of business would be the reading of the minutes of the Council.

The Secretary of the Council then read the minutes, giving a short explanation of the changes in the by-laws embodied, among those enumerated being the following:

In Section one, Article two, the Secretary stated that the only change was that three months was given for the completion of the balloting, but that the member was required to return the signed ballot within one month after its receipt.

The Chair then stated that the articles could be passed on as read, although a little irregular, if there was no objection. A motion having been made and seconded, and the question put, the motion was declared carried in favor of three months instead of one.

The Secretary of the Council declared that Article 7 referred merely to the duty of the president and was simply an addition to the clause that the president shall announce the appointees on such committees as soon as possible.

The Chair then stated that the foregoing action was in line with the recommendation made by the President in his address.

Motion having been duly made and seconded, and the question put, the same was declared carried.

On the change with respect to the formation of local branches from 25 members to 15; the Chair stated no branch will have representation in the Council until it has a membership of 25, but that the branch could organize with 15 members under the proposed amendment.

The question was called for and the same was declared carried.

President Mayo then stated that recommendation No. 5 was purely executive; that it really simply justified what was being done.

The motion having been regularly made and seconded and the question put, the same was declared carried.

The Chair then stated that recommendation No. 6 on changing the word "Proceedings" to "Journal" was necessitated by the fact that the constitution was drawn up before the Journal was adopted as the organ of the Association, and due to a failure to make the necessary change when the Journal was established.

For a similar reason a change in Rule 3 was necessary, which at the present time provides that an abstract of the proceedings of the National Association of Boards of Pharmacy and the Conference of Pharmaceutical Faculties shall be printed in the Proceedings of the American Pharmaceutical Association.

A motion regularly made and seconded was unanimously carried, and it was so ordered.

On the section regarding the function of Historian, the Chair stated that the only question raised with respect to that article was as to whether the historian was to be merely a recorder of passing events or collector of such historical matter as is sent to the organization, or as to whether he shall be a historian who writes out history; that the function heretofore exercised by the Historian was that of collector of historical matter, and that it seemed wise for the Council to

follow the suggestion embodied in the article and to provide that the editor, who was practically a permanent official giving all his time to the business of the Association, should act in that capacity.

A motion to that effect having been regularly made and seconded, and the question put, the same was declared carried.

The Secretary of the Council then pointed out the change with respect to the general rules of finance stating that there were a number of changes proposed with respect to deposits in the bank.

President Mayo then explained that as the rule now stood the treasurer was required to make a deposit when it amounted to $50, and that there were some days when the treasurer would be required to make a dozen deposits in one day if he obeyed the letter of the rule; that the change was intended to correct that phase of the situation.

Regularly moved and seconded; motion carried.

With respect to Rule 12, the Chair stated that the only change was the substitution of the word "February" for "January"; that it was necessary under the old financial system to have the auditing of the treasurer's and secretary's accounts done as early as possible; that the change suggested was merely for the convenience of the treasurer, who complains that he is so busy receiving dues in January that he would like to be granted two weeks additional time, and the Chair thought the members would be glad to favor the treasurer.

Motion duly made and seconded; carried.

The change with respect to the meeting of the auditing committee the Chair suggested was necessitated by the change previously made and the matter being put to vote, the same was declared carried.

The Chair stated that the change of Rule 12 provided for the printing of the list of all moneys received and the name of the person who had paid the money; further stating that this was done so that there would be practically a public accounting of the treasurer's report, so every member could look in the list of moneys received to see whether his money (the member's) was recorded in the treasurer's books. The Chair stated that this was unnecessary in view of the fact that the treasurer was under ample bond.

Treasurer Whelpley then stated that in lieu of the former provision he would be most happy to inform any of the members just exactly how their accounts stood at any time during the year.

The Chair stated that the Secretary of the Council had hitherto been paid his expenses in attending the meetings but that it had been done by resolution; that the Association had always hitherto paid the expense of the Secretary of the Council, that the committee was not adding any expense but simply making it a routine matter.

The matter having been regularly put to a vote, duly seconded, the same was declared carried.

The Chair then touched on Article 8, going into the history of the former cumbersome method of the payment of bills, stating that that method was no longer necessary because of the fact that the treasurer was under sufficient bond and that there was therefore ample provision.

The President then put the matter to a vote, and the same having been regularly moved and seconded, was declared carried.

The provision affecting the report of the committee of the Council to consider the question of representation in sessions of the House of Delegates was then presented, and fully dilated upon by the secretary of the Council, with a brief history of the action and discussions had upon the subject.

The Chair then inquired whether there were any further corrections desired in the minutes of the Council, and there being no response, the matter being put to a vote, regularly moved and seconded, the minutes were declared approved.

Treasurer Whelpley then addressed the session as follows:

The report of the treasurer, based on the fiscal year, January 1 to January 1, is submitted to the Auditing Committee and then published in the Journal of the Association, but it is a custom started by Mr. Sheppard, something like a quarter of a century ago, to submit at each annual meeting a summary showing the condition of the affairs of the finances of the Association at the time or near the date of the annual meeting, for aid in the matter of comparison.

I have followed the custom of closing this voluntary report with the first of July.

The finances of the Association may be divided into three parts, the invested funds, those funds are somewhat different in character, but in a general way the principle of none of them can be touched by the Association; of some, the interest cannot be touched until the amount is considerably more than it is at present; other interest can be used under certain conditions. Then we have the current funds of the Association, the money in hand to meet the ordinary expenses of the Association.

As a third class, the Association holds in trust various funds for specific purposes; some of these funds have been created by the Association as trust funds; others have been placed in the hands of the Association by other parties and the responsibility of caring for them has been assumed by the Association.

In some instances we had no definite instruction; that is to say, in some instances without any definite instruction or purpose as to the ultimate use of the funds or the interest that accrues.

On the 29th of July, 1915, the Association funds were as follows:

The Life Membership Fund—I will read these in round numbers—$20,900, that is one of the permanent funds.

The Endowment Fund, $6,200.

The Ebert Legacy Fund, $3,300.

The Centennial Fund, $2,900.

The Ebert Prize Fund, $1,100, making a total of $34,423. This is an increase of $1,160.15, since the report submitted at Detroit, one year ago.

Treasurer Whelpley stated that the increase was entirely due to interest, and added that a detailed report of invested funds would be submitted by the committee at one of the general sessions, giving all that information.

The Association's current funds are divided into two parts, cash in the bank and available bonds; the available bonds amount to $10,000; the cash $6,247.65, giving us of current funds, $16,247.65.

This, together with the permanent funds I just mentioned gives us a total of $60,627.29.

Now, the funds held in trust by the Association are, first, the Procter Memorial Fund created by the Association for a special purpose, which now amounts to $7,511.25.

The Rice Memorial Fund turned over to this Association by the Board of Trustees of the United States Pharmacopœial Convention is $172.06; and with the College Prize Fund placed in the hands of the Association by Dr. Motter of $35.54 gives us funds held in trust amounting to $7,719.55, so that the treasurer on the 29th day of July, 1915, is responsible to this Association for $58,390.84.

I will again say that for a more detailed report of the treasurer, the one in which the expenses, or rather, the nature of the expenses and the nature of the income are shown, I refer you to the annual report published in a recent number of the Journal and covering the fiscal year which corresponds with the concluding of the year 1914.

The membership of the Association is interesting to all and germane to the work of the treasurer.

We have at the present time a total of 2,532 members; that is, our total membership. That membership is divided from the standpoint of the treasurer into paying members, the honorary members and the members that the treasurer has been unable to locate. That is the way the treasurer looks at it.

Now, we have 112 life members. These life members have become life members in accordance with the provisions of the constitution. Any member of this Association who will pay this $100 any time during the first 10 years of membership will become a life member. There is a schedule of rates, payments for a longer period of membership, until a member has paid for 37 consecutive years—the statute of limitations of our Association prohibits him from paying any further dues—and the treasurer each year, in January, writes letters of a general form but of a personal nature to those who are entitled, by paying the membership of the year, to be placed on this roll and they are informed, having paid $5 a year for the 37 years, that the member will be entitled to live as long as he or she desires without further payment of dues to the Association.

These letters have brought some very interesting correspondence, that time will not permit of presenting here, but I will say that many of our life members are among our most substantial members, some of them in attendance and others in work, and the 112 life members, while not contributing annually to the Association in funds, do contribute materially to the Association in general propaganda work.

The Association has 8 honorary members distributed over different parts of the world. I am sorry to say we have not heard from these honorary members during the last year. As a rule, we hear from a number of them each year, but conditions are such that correspondence is not facilitated.

We have 17 members that are known as life members. At one time this Association followed a custom of occasionally placing on a list known as "life members, old style" persons who had been in service for some time in the Asso-

ciation and desired to drop out or circumstances forced them out. As I said before, I believe, we have 17 members that are known as "life members, old style," and most of them are no longer interested directly in pharmacy, but each year the treasurer writes to them, each year a different kind of letter. This last year I wrote them that I had just had the pleasure of sending a little note to each one of the active members of the Association who were expected to pay dues for 1915; that it was a pleasure to me to state that the party addressed was not indebted to the Association for any dues but was expected to take an interest in the membership and contribute either a new member, or in some way give evidence of remembering that he was a life member of the Association, and that brought a large number of letters, and brought at least two new members to the Association; so, that while we are not adding to this list of life members, old style, we are keeping in touch with them.

The membership of those whose addresses are unknown is not large; it is 21 at the present time: That is, relatively speaking, very small because the vicissitudes of life for the pharmacist are such that they are likely to change addresses frequently.

One reason why this list is much smaller than it was formerly is because of the work of the Journal.

The post office sees to it that changes of address are reported to the editor of the Journal and he in turn reports them to the treasurer so that we are keeping that list down to a minimum.

Our foreign members number 44. These are distributed throughout the United States and the dependencies.

It may interest you to very hurriedly cover the list of states where the number of members have increased during the past twelve months: Alabama, Arkansas, Georgia, Indiana, Kentucky, Louisiana, Maryland, Michigan, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Texas, West Virginia, Connecticut—an increase of membership in all of those places.

I speak of that because it is very significant. It shows our membership increases over the entire country; that it is not due to any specific spurt of any one locality, but that we have a steady growth of new members over the entire district we cover.

I have the exact number of members in any particular state which I can give to any member who is interested or who desires that.

The Chair inquired whether the total was 2535.

Treasurer Whelpley then stated that that was the total according to the treasurer's books during the past year; during this period closing July 25 twenty-nine members died during the year.

The corresponding period previous we had only eighteen deaths.

Why this death rate should so materially increase is something the treasurer cannot explain.

I will say, in closing, that at the Detroit meeting last year I stated that the payments had been so prompt that the treasurer's mind was such that he, the treasurer, really felt he hadn't very much trouble in collecting dues; that he had missed some of the correspondence of previous years regarding delinquent dues.

Just previous to leaving St. Louis I received a letter from one of my good, substantial friends that at one time had been one of the delinquent members, and had received a chain of letters, and he said that he really missed them, and consequently thought the Treasurer was missing some of the enjoyment of his work, and so he held up his money and he said he collected my letters but now he returned them to me with a check of $5; said he had enjoyed them and he freely inclosed the 12 cents postage and that he hoped he had contributed a little to the comfort and pleasure of the Treasurer in his work.

The Chair then asked what disposition the session desired to make of the report of the Treasurer.

Thereupon Wm. C. Anderson moved that the report be received and that it take the usual course; which motion was seconded, the question put, and it was so ordered.

President Mayo then suggested that the next item or number on the program was the reports of standing committees and inquired whether any of the chairmen were present.

H. V. Arny, Chairman of the Committee on Weights and Measures, then stated that the report of his committee was ready.

The Chair then requested Chairman Arny to present the report, which was submitted.

REPORT OF COMMITTEE ON WEIGHTS AND MEASURES.

Your Committee on Weights and Measures, in giving an account of its activities of the past year, can only report progress.

It will be recalled that at the Detroit meeting, held last year, the committee presented the following resolution, which was passed by the vote of the second general session of the Association.

Resolved, That the American Pharmaceutical Association is pleased to hear of a revival of a campaign aiming to make the metric units the official system of weights and measures in this country.

Resolved, That this Association, now, as in the past, stands ready to aid in accomplishing this purpose and hereby directs the next committee on weights and measures to co-operate with the American Association for the Advancement of Science, the American Chemical Society, the National Wholesale Grocers' Association and all other interested bodies in an educational campaign in interest of the metric system.

Resolved, That this Association take steps to enlist the support of the National Wholesale Druggists' Association in the proposed campaign on behalf of the metric system.

The lateness of the appointment of the present committee, coupled with the fact that the meetings of most of the national associations interested in the metric system will occur after this meeting of our organization forces us to limit our report to the expression of the hope that within the next few weeks there will be added recruits to the metric campaign.

Thus the resolution just cited has been formally submitted to Mr. T. F. Main, Secretary of the National Wholesale Druggists' Association, and there is every likelihood that resolutions of endorsement of the metric system will be passed at the meeting of that association, which will be held next month.

Through the co-operation of Professor Johnson, of our Weights and Measures Committee, the metric campaign has been brought to the attention of the Association of American Dairy, Food and Drug Officials, and the following resolution was submitted to that board and we have just heard that it was passed at the meeting of the association held in this city last week.

Resolved, That the Association of Food and Dairy Officials has heard with sympathy and interest of the proposed campaign of education on behalf of the metric system, looking toward the ultimate adoption of the system as the official standard of weights and measures in this country; be it further

Resolved, That this Association appoint a committee of five to co-operate with other national bodies in promoting such a campaign.

A similar resolution has been forwarded to President Herty, of the American Chemical Society, and under date of July 23d, we have received a letter from Dr. Herty, in which he promises to bring the matter to the attention of the association at the meeting scheduled to be held in Seattle next month.

Professors Johnson and Asher of our committee, have rendered valuable service in discussing the metric propaganda with those members of the committee with whom they are acquainted and find these gentlemen quite enthusiastic over the plan.

Your committee strongly recommends that the incoming committee continue the work upon the lines followed during the past two years. As things now stand, the national associations of grocers, both wholesale and retail, the National Canners' Association, the National Jewelers' Association, the American Institute of Electrical Engineers, the Association of Dairy, Food and Drug Officials, as well as our Association, have gone on record as favoring the metric system. We have every reason to believe that the wholesale druggists and the American Chemical Society will soon express their willingness to join in a metric propaganda. We believe that this association should go a step farther and we therefore recommend that resolutions, similar to those mentioned above, be submitted to the National Association of Retail Druggists, and the National Manufacturers of Medicinal Products.

If each of the eleven national bodies just enumerated agree to appoint a committee of five to co-operate with other national bodies in promoting a metric campaign, we believe that tangible results will ensue and that we will have the co-operation of the National Bureau of Standards, there is no doubt.

It will be recalled that last year this committee reported that the Bureau of Standards had not been heard from up to the time that the report was prepared. The presence of Dr. Wolfe at our Detroit meeting and the remarks that he made on the metric system, showed, however, the interest of the bureau in the subject, as does also the following letter from Acting Director E. B. Rosa, which was received after the adjournment of the Association last year.

August 15, 1914.

I wish to thank you for the draft of your report as Chairman of the Committee on Weights and Measures of the American Pharmaceutical Association.

Your letter to Professor Wilson seems to cover the case very well. You understand that the demand for the metric system—to become effective in legislation—must come from the public. This is a popular government and the power resides in the people. The Bureau is organized to carry out the purposes of the constitutional provisions regarding uniform standards of weight and measure, and to fulfill the functions prescribed in its organic act. In the performance of these functions the superiority of the metric system is so great that we use it quite generally in our work. In fact, its intimate relation to many of the engineering quantities, such as electrical units and standards, makes it especially important that we use it. The Bureau is always glad to testify to this fact at any time. Congress is a representative body and naturally desires to carry out the wishes of the people who up to the present time have not, as a majority fully indicated sufficient interest in the subject, for or against the metric system.

Your idea of a campaign of education, therefore, is an excellent one since those most familiar with the metric system are its best advocates. With the present lack of knowledge regarding the system one could hardly expect anything but the existing status.

We note Professor Wilson's reply but do not find what action was taken by the American Chemical Society last April. Would it not be well to take up the matter with the Council of the Society again to ascertain what action, if any, has been taken, and what they will do toward such a campaign as you propose? I think it only needs some one who will make it his business to get a decision from each of these important societies to inaugurate the movement. The American Institute of Electrical Engineers would probably take an active interest in the matter.

Regarding the second point, i. e., the best action to be taken by your Association, it would be well for you to establish a permanent committee to prepare a report and resolutions embodying your wishes in the matter for adoption by your Society. In order that Congress may know what you wish to do it would be better for you to send to each congressman at each session a printed copy of your report and resolutions. This would keep the matter before them and if properly worded would doubtless be read by many of the members.

We are considering Professor Richards' suggestion as to the cumbrous names used in the metric system. This is thought by some to be a difficulty, but "avoirdupois pound" is quite as cumbersome as "cubic centimeter" and not nearly so descriptive. In order to be

free from ambiguity in the old system, probably as many syllables would be required as in the metric. Furthermore cubic centimeter is frequently called in the laboratory "cc." It is possible that the initials could be pronounced in other cases to advantage. I enclose sample of resolutions. A similar set might be prepared by your Association in which the pharmaceutical aspect of the system could be emphasized just as in the enclosed resolutions the educational point of view is taken. A similar set could be prepared for each society, emphasizing in turn the point of view of the special subject for which each society is organized.

So many individuals, associations and societies have urged us to take action that we feel as though there must be a wide-spread interest in the subject which only needs organizing to have considerable weight with Congress. If Congress should ask our opinion we would, of course, give a fair presentation of the advantages and disadvantages of the metric system in commerce and trade. How far it would be applied to the details of manufacturing would have to be determined by the interests concerned.

It is natural that the members of Congress with so many other questions to consider should not of their own initiative take up the subject of the metric system. It is somewhat technical, but if your congressman were willing to see you on the subject and to take enough active interest in it to become posted, it might be a good means of getting the congressional point of view. Representatives in Congress would doubtless listen more attentively to the views of the public, especially those who are interested in commercial, technical and scientific societies.

I would be glad to receive copies of all your resolutions and reports and can assure you of our keenest interest in the subject.

It might be pointed out that the officials of the bureau cannot well assume the responsibility of carrying on a metric propaganda, since there is a strong and influential group of metric antagonists, who have already criticised the officials of the bureau for the little they have done in the way of a metric campaign.

This leads us to the following questions: Assuming that the national bodies mentioned above get together in a metric campaign, how is such a campaign to be conducted? This was the main topic of discussion at a conference held on July 28th, between Chairman Drake of the Wholesale Grocers Metric Committee, Secretary Becker of the Grocers Association, and the chairman of our committee.

As a tentative plan it was suggested that the chairman of the committees, of the ten or more national associations, hold an informal conference, discussing ways and means and then report back to their several organizations. Whether a central bureau should be established or whether a less formal method of propaganda be followed, the parent bodies can then decide. In this connection, the activties of The Dental Association of Great Britain is worthy of comment, this being an organization of associations and individuals who are endeavoring to bring about the adoption of the metric system by the British Government.

Following the custom of the past, below is found a summary of news relating to weights and measures that has come to the attention of your committee.

It is of course well known that the new British Pharmacopœia uses metric weights and that the committee of revision of the forthcoming U. S. P. has decided to use the word "milliliter" (mil) instead of cubic centimeter (cc.).

On January 4, 1915, there was introduced in Congress during the third session, House Bill No. 20,526, by Mr. Dillon, of South Dakota, making compulsory the use of the metric system in 1920. This bill died with the Sixty-third Congress, since it was apparently not backed by any of the national bodies enumerated above.

A national law creating a standard barrel for food commodities, of a capacity of 7,056 cubic inches, will go into effect on July 1, 1916.

One of the issues of *The Nation's Business* published during the past year, had a two-column article pointing out that the adoption of the metric system by this country has become a crying necessity if we are to enlarge our foreign trading, while in recent issues of the *New York Journal of Commerce*, there has been conducted an interesting discussion on the merits and demerits of the metric system.

In conclusion, Professor Timmons of our committee, points out the need of the legal examination of weights and measures on the prescription counter, not from the standpoint of fraud as our grocers and butchers scales are examined, but from the standpoint of health and life itself maybe, since a high degree of accuracy should be practiced in the dispensing of potent drugs. A campaign of this sort is now under way in Indiana and with astonishing results. That drug store scales and weights are not always accurate the reports

of sealers of weights and measures have indicated more than once during the past year, and it therefore behooves all druggists to give the accuracy of their weights and measures their most careful attention.

Respectfully submitted,
C. W. JOHNSON,
PHILIP ASHER,
C. M. SNOW,
G. D. TIMMONS,
H. V. ARNY.

The Chair then inquired as to what disposition was to be made of the report of the Committee on Weights and Measures, suggesting that ordinarily the report was simply referred to the Committee on Publication.

Dr. Arny said that he desired to call attention to two recommendations, contained in the report, which he thought were both innocuous, and that there would be no difficulty presented in taking the same under consideration.

Dr. Arny stated that there would be some work required, part of which would be to assist in getting other associations in line. He thought there would be little difficulty, and also stated an effort should be made to have other national associations pass similar resolutions.

Mr. Frank H. Freericks then moved that the paper take its usual course and that the recommendations contained therein have the approval of the Association.

On motion regularly made and seconded, it was so ordered.

The Chair announced that the next matter to be taken up would be the report of the Secretary.

General Secretary W. B. Day said: My report will be very brief. I refer to the report of the Secretary. I wish to call attention to the fact that I have with me a stock of badges and bars, so that any of you who wish to be supplied, I will be glad to fill your orders as fast as I can, or take your orders for future delivery.

The general secretary then presented his report.

REPORT OF THE GENERAL SECRETARY.

To the President and Members of the American Pharmaceutical Association:

I have the honor to report on the various matters entrusted to my care during the past year.

STOCK OF PROCEEDINGS.

During the term of office of my predecessor, Dr. J. H. Beal, the stock of the publications of the Association was stored in the college of pharmacy building at Scio, Ohio. When, after Secretary Beal's resignation he moved his home from Scio to Urbana, Illinois, it became necessary to make other provision for caring for this property. At the last convention, the generous offer of Professor J. U. Lloyd to store these publications in the Lloyd Library was accepted. Therefore, your secretary made a trip to Scio in November, met Professor Beal there and arranged for the shipment of this stock of publications to Cincinnati, where they have since been stored at the Lloyd Library. An inventory of these publications is now being made, under Professor Lloyd's direction and is nearly completed. Although there has been some unavoidable delay, the stock is now in such shape that orders can be filled promptly. The sales of proceedings since September 1, amounted to $77.42. The thanks of the Association are due to the Pittsburgh College of Pharmacy, who as the owners of the Scio College building, gave the free use of it to the Association for several years; also the Lloyd Library and to Professor J. U. Lloyd for their generous assistance in storing our publications and in undertaking to fill our orders from this stock.

YEAR BOOK.

The Year Book, Volume II, is finished and ready for distribution. It should be in the mails by this time. The printers, the Eschenbach Printing Company of Easton, Pa., have done well in expediting the publication. What delay there has been is due to no fault of theirs but to the time necessarily required to read and correct proof and to prepare the index. In view

of Reporter Diehl's years and the rather precarious condition of his health, it was deemed best that he should not work under any pressure but should be given ample time. The new Year Book will contain nearly seven hundred pages and will conform in style to the first volume.

NATIONAL FORMULARY.

Since September 1st, when my term of office began, until July 27th, 196 orders for the National Formulary have been received and filled. These orders aggregated 999 copies, of which 969 were cloth bound, 28 sheep and 2 sheep interleaved: 134 orders were for single copies only. The amount of the sales was $1235.84. The collections during the same period were $1278.10. The stock on hand in the various bindings is: Cloth, plain, 54; sheep, plain, 42; cloth, interleaved, 112; sheep, interleaved, 35; total, 243. Another lot of 500 to be bound in plain cloth has been ordered recently. There is outstanding in the ledger on National Formulary accounts, $208.80. The expenditures on account of National Formulary since September 1, 1914, have been $328.08, which, however, does not include the traveling expenses of the members attending the special meeting and amounting to $249.57.

BADGES AND BARS.

I received from the former Acting Secretary, last September, 25 gold badges and 95 gold bars of various years. Three (3) gold bars were made to order last October and 20 were ordered for this meeting. One badge and thirteen bars were sold during the year, up to the 29th of July. (Four badges and 19 bars were supplied during this meeting.)

The stock of gold bars comprises:

2, 1894	15, 1896	3, 1899	5, 1905	2, 1910	3, 1914
13, 1895	4, 1897	13, 1901	1, 1908	27, 1913	17, 1915

In all 105 bars and 24 badges.

The receipts for badges and bars up to July 29th, have been $14.10, expenditures $25.10 (since September 1, 1915).

Receipts, September 1, 1914, to July 29, 1915 (ten months):

	National Formulary	Pro. and Year Book	Badges and Bars	Miscellaneous	Total
October	$254.67	$ 5.50	$ 0.80	$10.00	$270.97
November	105.04		13.30	2.50	120.84
December	55.59	5.08			60.67
January	75.55	49.94			125.49
February	160.47				160.47
March	252.91			4.00	256.91
April	47.29				47.29
May	103.50				103.50
June	186.65				186.65
July	36.43	16.90			53.33
Total	$1278.10	$77.42	$14.10	$16.50	$1386.12

The instructions of the Association with regard to the publication of the combined program have been carried out to the best of the Secretary's ability, under rather difficult circumstances. It is hoped that the beginning so made—for this is the first time that such a program has been printed—will facilitate our work and enable the preparation of a fuller and more detailed program next year.

Respectfully submitted,
WM. B. DAY, General Secretary.

After concluding the reading of the report the General Secretary stated that he would like to present with the report a letter from Professor Lloyd which contains further information with regard to the stock of proceedings.

REPORT OF LLOYD LIBRARY.

To the Council of the American Pharmaceutical Association, at Its Meeting in San Francisco, August, 1915:

Gentlemen—I can report as follows concerning the documents of the American Pharmaceutical Association forwarded by Professor Beal to the address of the Lloyd Library:

One carload reached us safe, and was immediately carted to our warerooms, built by us to be as nearly fireproof as possible. Owing to the fact that there was no invoice of the publications, we could do nothing other than open the various boxes and assort the contents, which I will frankly say, proved to be a prodigious task. Inasmuch as this shipment occupied the entire floor space of two stories of our large warehouse, I can well comprehend

that it would have been impossible to accomplish this work in any private residence, or in any ordinary sized institution.

One of our librarians was given special charge of this work, and devoted her entire time thereto, sorting out the publications, putting them together systematically, tying them up into packages properly numbered and labeled, and otherwise arranging them according to library system

Of each year's Proceedings, ten copies were reserved; the surplus of each year being carefully wrapped and packed in boxes properly labeled on the outside, so that at any time a librarian can put his hand on any volume needed.

A few boxes yet remain unclassified, of miscellaneous papers, unbound sets, prints, Journals, and other miscellaneous documents not concerned in the Pharmaceutical Proceedings. I would like instructions what to do with these. At present these are promiscuously mixed.

The accompanying report gives the entire stock unbound, cloth-bound and otherwise bound of the Proceedings of the American Pharmaceutical Association now existing in the hands of the Society. It will be observed that four years are entirely out of print, 1852, 1853, 1854, and 1859. Also that there are no bound copies of your documents for 1912, 1913, and 1914.

I have thus attempted to proceed according to directions given me, and hope that my efforts to accomplish the work may be satisfactory. It being the intention to place the ten copies of each year so that they may be at any time at the command of the librarian, I have directed a carpenter to build a series of special compartments that will hold the entire set, including blank spaces for the missing years.

Respectfully yours,

JOHN URI LLOYD, President Lloyd Library.

President Mayo: Gentlemen, you have heard the report of the Secretary. I might say for the information of those not cognizant of our methods, that all the financial portion of the Secretary's work is looked over by the same Auditing Committee that audits the Treasurer's financial accounts at the end of the fiscal year, and these financial accounts have been audited by this committee for the fiscal year as will appear later on.

A motion was then made, duly seconded, that the report be accepted and that it take its usual course; and it was so ordered.

Treasurer Whelpley then asked if he might have the privilege of moving a vote of thanks to the Lloyd library as well as for the very generous and efficient manner in which the property of the Association has been placed in serviceable form. Mr. Freericks seconded the motion and suggested that it be carried by a standing vote.

The Chair then said that it gave the President great pleasure, needless to say, to put the motion; that no one who had any experience whatever in handling accumulations of this kind but could appreciate the immense amount of work required and the especial skill necessary to keep matters in the proper shape and get desirable results; that those who had had the privilege of going through the Lloyd library were well convinced that it could not have been put in better hands; and that through the kindness of the Association's good friend and servant that the Association had this done, and therefore he acted on the suggestion of the seconder of the motion that a standing expression of thanks be tendered Professor Lloyd.

The Chair then called upon Professor Lloyd to say a few words.

Professor Lloyd said: I thank you for your kindness, and the evidence of thanks given the Lloyd library and I ask for information and instruction.

These books are not insured, nor is the Lloyd library; not one dollar of insurance.

We think our buildings are nearly fire proof. We know a fire company is very near to our establishment, but we have no method of valuing a property like that

and therefore we have not insured any document in our establishment. I refer to the Lloyd Library plant.

I would suggest that these books be divided; that the copies of each be kept in one location and one building, and that the Lloyd library be instructed to take the reserve stock to some other locality and store it, thus providing against an accident and perhaps a fire and the loss by water in case there be a fire.

It seems to me if this is accomplished there will be no reason to pay money out for insurance, although that remains for the Council to determine whether it is best to take out an insurance policy or not.

Treasurer Whelpley then moved that the matter of insuring the property be referred to the Council with power to act; which motion was duly seconded, and the question put, the motion was declared carried.

The Chair then stated that the day previous the President had failed to call on the President of the Pacific Coast Women's Pharmaceutical Association; that it was the first time the President had ever failed to call on a lady when he should have done so. But suggested if the lady was present the President and members would be very glad to hear her.

Mr. Wise stated that Mrs. White was the lady referred to by the Chair, that she was not attendant on the session; that she would be at the luncheon but was unable to be present at the general morning session.

The Chair then requested Mr. Wise to convey to the lady the Association's regards and keen regret for the president's failure in not calling upon her previously; informing the message bearer that she would be very, very welcome to participate in the deliberations and that the president would be glad to call upon her at any time.

Mr. Wise thanked the President and stated that he would so inform Mrs. White.

President Mayo then stated that it was always a peculiar pleasure to him to call attention to the fact when he found that a pharmacist had received recognition outside of the line of his own craft, and stated that the only pharmacist who has been made a state commissioner to the exposition was in the assemblage, naming the Association's dear old friend Professor Lloyd; the President stated that Professor Lloyd was one of the commissioners from the State of Ohio busily engaged here (San Francisco) in the work of the Ohio State Exposition building and activities in connection therewith.

The Chair then called upon Mr. Lloyd to tell the convention what interest there was to the pharmacist in the work attached to and involved in the appointment of Exposition Commissioner.

Again I have the opportunity of thanking you for giving me a chance to talk to you (laughter); but let me say to you that one of the opportunities of the pharmacist as commissioner in supervising the building of a world's fair building is that of missing many opportunities for rest and recreations and pleasures and adventures in the years that he is employed for that work.

I missed the meeting at Detroit by reason of this Panama-Pacific Exposition building commissioner allotment; and I have missed other pleasurable opportunities in that direction by reason of that work, and I would suggest, Mr. President, if you are asking for suggestions, that if any of that work should come to you, that you decline it, yes, decline the honors with thanks. (Laughter.)

Now, a few words: You gave me the privilege. Now, I will take the privilege to say to you young people who are here that you are all interested in the World's Fair Home Building. And don't forget that you who are from these various cities, don't forget to record your name,—Pennsylvania, New York, or whatever other state it may be—wherever it may be, record your name in your home building and take a little pride in it.

You do not know how we people who built these buildings—how we are interested in having a little attention paid to the work that we have done.

I speak for all of you. Now, the Ohio building was built by a pharmacist. He did not neglect the work and he sacrificed in all other directions. He even sacrificed his pharmacy work to accomplish that public work for the State of Ohio, he might say that his good friend Judge Harmon got him into it, ill-advisedly—so far as he was concerned, and, having accepted the commission he did it, but, never another one. One is enough, and I know when I have a plenty.

It has some pleasures attached to it, especially from the financial side. You are always expected to pay your own expenses, which is a pleasure, too.

Go to the World's Fair; go to each of the buildings that belong to your respective homes. If you have none, remember you have a home in the Ohio building. (Applause.)

If you can't find any home, go to our Ohio building; it may not be a $750,000 building, but if you can't find a home anywhere else go to the Ohio building, there is a home for everyone.

If you are a member of the Ohio organization, if you come there by invitation, not by request, but by a right that you have to the Ohio building, record your name and after it "Ph. G.," that will please me, and the good deputy commissioner is always there, and he is a mighty fine fellow. And Mrs. Bryce, you young people all want to see Mrs. Bryce; go there and record your name. Say to the good commissioner, 'I am glad to come to the Ohio building.'

And after you have visited the Ohio building you can take your time and saunter around the other buildings (am I right, Mr. President?)

President Mayo: You are always right.

Professor Lloyd (continuing): As one of the three commissioners I take great pleasure in inviting you, the members of the American Pharmaceutical Association, collectively or singly, with your families or not, at this time or any other time, you and your friends, to visit the Ohio building; and if you do this you will not regret it and you will very much please the State of Ohio and the associates of all the other states and California.

And among the other beautiful buildings you should not forget that magnificent great California building. Don't forget that—which you will get to after you visit the Ohio building. (Laughter and great aplause.)

President Mayo: Professor Lloyd, I am sure that all the members will be very glad to accept your invitation. We will also accept your very kind advice to positively decline the honors with thanks when they come to us to serve as commissioners.

Now, the Chair has several announcements to make.

Ex-President Rusby came with a special party and wishes to announce that the special car which will be used by his party has a few remaining berths; this car will leave on Thursday, August 12, for Los Angeles, and then via Santa Fe Railroad, and expects to arrive in New York on August 28.

The Chair then announced that the next order of business would be the reports of general committees.

The General Secretary then stated that several reports had been placed in his

hands, but that it was his idea that some of these had better go to the sections, enumerating, for instance, the report of the Committee on Quality of Medicinal Drugs, stating that it was a printed report and quite extensive and the General Secretary assumed need not be read, but that it ought preferably be referred to the Scientific Section.

The Chair then suggested that the report in question be referred to the Scientific Section.

The Secretary then announced that Prof. E. L. Patch, who is chairman of the committee, had supplied a very limited number of reprints of this report, which the Secretary of the Scientific Section would distribute.

The General Secretary also stated that the Committee on Physiological Tests had handed in its report, which should go to the same section.

The Chair then announced that it would take the same course.

The General Secretary then announced the committee report on Status of Pharmacists in the National Government, stating that it was the belief that some of the pharmacists present at the session would be interested in hearing the report of the committee.

The General Secretary also read a portion of the letter of the chairman in which the chairman stated that he had purposely made the report short as there was little to report except to advise why the committee had not been able to secure the legislation desired, and expressing the wish of the chairman that the report would meet with approval.

REPORT OF THE COMMITTEE ON THE STATUS OF PHARMACISTS IN THE GOVERNMENT SERVICE.

To the President and Members of the American Pharmaceutical Association:

As chairman of the above-named Committee I herewith beg leave to submit the following report, showing the conditions existing with respect to pending legislation before Congress, looking to the improvement of the condition of the Hospital Corps, United States Army and the members composing same.

The past year Congress was overcrowded with work, incident to the war in Europe, and the anxiety of members of both houses of Congress to be able to get away and return to their homes as early as possible, they having been kept in Washington many months longer than usual by reason of the long special session of Congress. With the opposition that developed on the part of the Secretary of War and Chief of Staff, to the bills we had introduced by Senator Bacon and Mr. Hughes, it was found impossible to secure any consideration whatever from the Committee on Military Affairs or its sub-committee. Even the clear, strong appeal made by Col. Gandy, acting Surgeon General, when he appeared at the hearing held previous to the last annual meeting held in Detroit, seemed to make no impression on the members of the committee that something should be done for the members of the Hospital Corps, so that the army could obtain better men than they are at present able to do.

The Surgeon General's office has rendered us much assistance in the past and has been endeavoring to solve the problem whereby the opposition could be overcome, increase the efficiency of this branch of the service and better take care of the pharmacists. As yet they have been unable to devise anything that has not met opposition and while the task is a difficult one I feel sure that in time we can expect that some means will be devised that will prove satisfactory.

The granting of commissions to pharmacists has been strongly opposed from within, likewise have they opposed the provision of the Hughes bill creating a rank of Sergeant Major, for pharmacists, for the reason that it conflicts with the present class of Sergeant Majors. It would seem wise for the American Pharmaceutical Association to recommend to the Surgeon General, in the consideration of the question of the improvement of the status of the Hospital Corps and its members, that the rank of pharmacist be created and that this rank be equal to and equivalent of that of first lieutenant, if we are unable to secure favorable recommendation to provide for commissions for pharmacists of the Hospital Corps.

The coming session of Congress which convenes in December will no doubt be very much overcrowded owing to many important questions incident to the European war. The

re-introduction of the Hughes bill would not receive any consideration, owing to the opposition of the Secretary and Chief of Staff, and as nothing better has as yet been suggested whereby all interests have been able to get together, I therefore recommend that the American Pharmaceutical Association use its best endeavors with the Surgeon General, looking to the framing of some measure that will properly take care of the pharmacists in the Hospital Corps; improve this branch of the army and at the same time overcome the objections that have been raised. The pharmacists in this branch of the Government Service are the only ones that have not received recognition.

Respectfully submitted,
S. L. HILTON, Chairman.

The Chair then announced that Chairman S. L. Hilton, of the committee, and the members had touched upon a subject on which the president had devoted considerable space and attention in his own address, and if the convention would permit the Chair to suggest it, he thought it might be desirable to report the recommendations to the committee on president's address; that they might possibly like to consider the two recommendations in conjunction.

Dr. Anderson then moved that the report be referred to the Committee on President's Address, which motion was carried, and it was so ordered.

The General Secretary then announced that he had a letter from Mr. John F. Hancock, on the report of the Committee on Procter Memorial, stating his inability to be at the convention and extending his best wishes for the success of the meeting.

The General Secretary stated that the report was very short, and it was therefore read.

REPORT OF THE COMMITTEE ON WILLIAM PROCTER, JR., MONUMENT FUND.

The Committee on the William Procter, Jr., Monument Fund respectfully reports that the Chairman, accompanied by Prof. Jos. P. Remington, of Philadelphia, and Mr. W. S. Richardson, of Washington, D. C., have appeared before the Commission of Fine Arts of the District of Columbia in conference on the Monument to the late Prof. William Procter, Jr., which it proposes to erect in the Smithsonian Grounds at Washington, D. C. Remarks were made by the members of your Committee, explaining the plans and purposes of this Committee and that it was our idea to erect a Monument in keeping with those commemorating the life work of Dr. Gross and Dr. Rush, thus completing the plan to memoralize the three strong links in the History of Medicine in the United States—Pharmacy, Surgery and Therapeutics.

The Commission of Fine Arts decides the character of memorials that shall be erected in Washington, while the Congress of the United States gives permission for the site, and it was suggested that your Committee should petition Congress for the proposed site in the Smithsonian Grounds.

This application would have been made at the last session of Congress had it not been for the generally disturbed condition and the unusual amount of legislation before both the House of Representatives and the Senate. It was the advice of those Congressmen with whom we had been in conference that this application be deferred until the fall session of Congress. This application with the attendant bills will be presented as soon as Congress again convenes and we have every prospect of their early approval of our plans.

J. F. HANCOCK, Chairman.

It was then moved that the report be received and that it take the usual course, which motion was seconded, and it was so ordered.

The report of the General Membership Committee was then read, and the same action was taken with respect to that report; namely, a motion was made, seconded; carried, and it was received and ordered that the same course be taken.

REPORT OF THE GENERAL MEMBERSHIP COMMITTEE.

To the President of the American Pharmaceutical Association:

The membership campaign has been carried on along the same general lines as last year.

A large membership committee, comprising 227 members, was divided into eight geographic districts and into seven special sub-committees.

Extensive correspondence with the district chairmen and state chairmen was carried on. Lists of eligible persons were supplied and a vigorous effort made to materially increase the membership. That this effort has met with rather poor success is due no doubt to the general business depression and the unrest incident upon the European conflict.

In Nebraska, West Virginia and Maine there were *relatively* considerable accessions to the membership. New York, however, again leads in the *number* of new members elected.

As was pointed out by Chairman Packard a year ago, plans should be made to interest students of pharmacy during their college years. The suggestion is made that this might be best accomplished through the Journal, possibly by a concession in the subscription rates to students and particularly so if by co-operation with faculties, the valuable information presented in the Journal can be utilized in reference or supplementary reading as a part of the curricula of the colleges of pharmacy.

It is encouraging to note that the number of prize memberships offered to students in the colleges is steadily increasing.

It is hoped that action will be taken at this convention such as will facilitate the formation of local branches and aid in their development when formed.

The Journal reaches out to the membership everywhere. The branches afford local centers for the dissemination of progressive ideas in pharmacy. These two agencies will do much toward building up the membership when their possibilities are more fully realized.

The expense of the membership campaign has been for printing, postage and stationery, $115.91. The number of new members elected since the last meeting is 304.

Respectfully submitted,

W. B. DAY, Chairman.

The General Secretary then announced that he had the report of the National Committee on the Pharmaceutical Syllabus; that it was a very brief report; also stating that the Secretary had a letter from Dr. Theodore J. Bradley, submitting the report, stating that the death of Mrs. Gregory and illness in his own family prevented either Dr. Gregory's or his presence.

REPORT OF THE SYLLABUS COMMITTEE FOR THE YEAR ENDING JULY 31, 1915.

Bulletin V.

To the President and Members of the American Pharmaceutical Association:

The Syllabus Committee of your Association respectfully submits the following report for the year ended on July 31, 1915.

The second edition of the Pharmaceutical Syllabus was issued during the spring of 1914 and 700 copies have been sold, mostly to members of state boards of pharmacy and faculties of colleges of pharmacy. The Syllabus has taken its proper place as a helpful reference book that is fast assuming an important office in the co-ordination of the work of the colleges of pharmacy and the state boards of pharmacy.

During the fall of 1914 the Journal of the American Pharmaceutical Association invited pharmacists to criticize the Syllabus and a considerable number of responses were received and published in the issues of December, 1914, and January, 1915. The opinions there expressed were almost invariably favorable to the Syllabus and the Committee was praised for the progress it has made towards the accomplishment of an exceedingly difficult task.

The Syllabus has now been formally adopted by a large number of the state boards of pharmacy as a guide in the preparation of their examinations and, in whole or in part, by many colleges of pharmacy. It is expected that a list of the boards and colleges that have adopted the Syllabus will be published soon.

The finances of the Committee are in a satisfactory condition, the liabilities being much more than balanced by the value of 300 copies of the Syllabus on hand, for which there is a steady sale, and of the electroplates for printing the books.

The Committee requests that your organization continue the annual appropriation of $25 towards the necessary expenses of its work.

Signed,

WILLIS G. GREGORY, Chairman.

THEODORE J. BRADLEY, Secretary-Treasurer

(Detailed financial report to the Committee will follow, as Bulletin VI.)

Boston, July 31, 1915.

The Chair stated that the custom of the Association had been heretofore to have the initial steps in all matters pertaining to appropriations, taken by the Council, and for that reason it might be well to refer this recommendation to Council.

It was moved that the request for an appropriation of $25 be referred to the Council, and upon motion regularly made and seconded, the same was carried, and it was so ordered.

The General Secretary then announced that he had the report of the Committee on Recipe Book, which was short, and the question arising in the general secretary's mind was whether the session would like to refer it to the Section on Practical Pharmacy and Dispensing.

It being regularly moved and seconded, to that effect, the motion being carried, it was so ordered.

The General Secretary also announced that he had a letter from Mr. Beringer inclosing the report of the Committee on Standards for Unofficial Drugs; that he did not know what was the customary action with respect thereto, but thought it should be referred to the Section on Practical Pharmacy and Dispensing.

The Chair then stated that that would be done.

The General Secretary also stated that Mr. England had a report for the Committee on Patents and Trade Marks; that it logically be referred to the Section on Education and Legislation; that there were a number of committee reports that had not yet been turned in and that possibly some of the chairmen of the committees were present, and might wish to make explanations.

On motion and on suggestion of the Committee on Editing Rules, the same was discontinued.

The General Secretary then announced that there was the report of the International Committee on Nomenclature, over which Dr. Alpers had supervision, and inasmuch as he had already stated that on account of the complication caused by the war and for other reasons the committee was not prepared to make any report. The president thought that the only thing now in order, with war in the air everywhere would be the discharge of the committee, and that he therefore suggested it.

The motion having been regularly made and seconded, and carried, it was so ordered.

The General Secretary then stated that the Committee on National Legislation, of which Mr. John C. Wallace was chairman, had not sent in any report; that Dr. Beal, Mr. Holzhauer, Mr. Hubbard and Mr. Hilton were the other members.

The General Secretary then announced that the report next to be heard from would be that of the Committee on Regulation for the Transportation of Drugs by Mail; that Mr. Benjamin L. Murray was the chairman.

Chairman announced that that report was with the Committee of the Section on Education and Legislation.

Secretary Day then stated that Mr. Freericks had an important announcement that he wished to make with respect to the session of the Section on Education and Legislation.

The General Secretary then suggested to President Mayo that there was yet remaining on the program the disposition of the Committee on United States Phar-

macopœia, of which Mr. Lackenbach was chairman, and the Committee on Time and Place of Meeting; the secretary also stated that he presumed the Committee on Time and Place would report at the last general session, as was customary, eliciting the information that Professor Remington was chairman.

Professor Remington then stated that he would like to say to the members generally that he had with him the first twenty-five pages of the United States Pharmacopœia in proof and had about 300 pages in galley proof, and that they were ready to be passed around to be inspected.

The General Secretary then announced that that concluded the general committees, the other committees being required to report to the Council.

The General Secretary stated that he believed that the Committee on Invested Funds reported to the Association, and inquired of Dr. Whelpley as to whether they had reported.

A gentleman then stated that they had reported to the Council.

Treasurer Whelpley then stated that it seemed as if quite a number of reports were required "not exactly from" the Treasurer but "on" the Treasurer; that an association gets at him from various angles; that the by-laws required that the Treasurer must, in company with a member of the Association, examine the bonds that are in the trust company vaults, and make affidavit with reference to the fact that the bonds are there, and that this had been done.

The Treasurer further stated that the Auditing Committee visits him and examines his books and compares them; then the Treasurer is expected to make an annual report for the fiscal year; in addition to that that he made his report to the committee, which was a supplementary report showing the condition of the Association financially at or near the time of the meeting; that in addition to this he was required to comply with Rule No. 14 of the General Rules of Finance of the Association requiring that a committee on invested funds shall make a full report at the annual meeting, which shall be read in full and published in the proceedings; that the Treasurer is an ex-officio member of the Committee on Invested Funds, and that being more familiar with the conditions, he submitted that report, which was really a report of the committee, and the report to which he referred but a few moments previous, as giving the title, detail and status of each fund.

That he would mention the funds in the order in which they were established, which was as follows:

The first one being the Ebert Prize Fund established by Albert E. Ebert at Indianapolis in 1875 when he was President of the Association; the Treasurer stating that Mr. Ebert gave the Association $500, the interest of which was to be used in encouraging original investigation; that almost annually part of this interest had been used but that the accumulated interest added to the $500 at that time amounted to a total of $1103, merely going to show, the Treasurer pointed out, how interest counts up in the course of time.

The Centennial Fund was established by a balance left in the hands of the local committee in Philadelphia when this Association met in that city in 1876; the Entertainment Committee raised more money than they spent, although they endeavored to spend it freely and liberally; and that balance became the nucleus of

what is known as the Centennial Fund, the interest of which cannot be used but must be added to the fund.

At the present time that amounts to $2,329.23; $1,000 is in Massachusetts state bonds; $1,800 in the Boston Penny Savings Bank, drawing 4 percent interest, and the accumulated interest makes up the total just read.

I should have said that the Ebert Prize Fund is in the Boston Penny Savings Bank drawing interest at 4 percent per annum compounded semi-annually.

The Life Membership Fund was next established and consists of the money paid by those who became life members by payment, in various sums, by some $25, up to $100.

The interest of that money for any current year may be used for any purpose that the Association may direct, but if it isn't used during that current year it becomes a part of the principle and cannot be touched by the Association.

The Life Membership Fund amounts to $20,902.26. It is invested in Massachusetts state bonds and the interest is added semi-annually.

The Association holds in trust a College Prize Fund which originally consisted of $25 placed in the hands of the Association by Dr. Motter, of Washington, for the purpose of giving annually for five years $5 prizes for students in the National College of Pharmacy.

The conditions were such that no call has been made upon the fund and it has gradually accumulated until today it is $36.34.

The money is in the Boston Penny Savings Bank drawing 4 percent interest.

The Endowment Fund was established by Mr. S. A. D. Sheppard and Dr. J. H. Beal, who jointly gave the Association certain sums of money and agreed to place in the fund one dollar for every $20 that the Association or any member of the Association puts into this fund.

At the present time that fund amounts to $6,184.77. It is on deposit in the Boston Penny Savings Bank drawing 4 percent interest compounded semi-annually.

The Board of Trustees of the United States Pharmacopœia raised a fund known as the Rice Memorial Fund, from which was erected at the grave of Dr. Charles Rice, in New York, a very fitting monument; from this fund was also published a memorial volume.

The small balance left on hand was carried by the Trustees of the United States Pharmacopœia for several years, and finally by vote of the Trustees and acceptance by the Council of the American Pharmaceutical Association was placed in the hands of this Association as a trust fund, without any specific limitations or directions. It is deposited in the Boston Penny Savings Bank where it was originally, and now amounts to $172.06.

The Procter Memorial Fund established for the purpose of erecting a monument in Washington now amounts to $7,511.25. Of this amount $4,812.46 is a time deposit in the International Bank of St. Louis drawing 4 percent interest.

The balance is in cash in the International Bank of St. Louis. This certificate, of course, runs for twelve months, but the remaining balance, some $2600, is kept in cash so that the committee can, when it chooses, at the appropriate time, draw upon the fund and the money can be used.

There is, however, 3 percent paid on this daily balance by special arrangement with the bank, a special arrangement that the Association has. Two percent is the ordinary amount, but we get three.

The Ebert Legacy Fund is a fund left by Albert Ebert to the Association by his will and amounts at the present time to $3,330.39; $2.000 of this is in St. Louis bonds and $1,290.48 is in the International Bank in open account.

That covers all of the funds of the Association and this is a report of a standing committee on invested funds, really submitted by the Treasurer for the committee.

The chair then stated that Treasurer Whelpley was just like a gatling gun, compelling the Association to withstand his siege of report; that the report in question required so far as he knew no action, inasmuch as the work of the committee had already been supervised by the Auditing Committee, and desired to know what action the session desired to take upon it.

It was then regularly moved and seconded, and the motion carried, that the report be accepted.

The President then announced that the session would hear from Chairman Hynson of the Committee on Organization of Local Branches.

REPORT OF THE COMMITTEE ON LOCAL BRANCHES.

To the Officers and Members of the American Pharmaceutical Association:

Gentlemen—The experience of this Committee is like many others; it did not receive notice of its appointment until late in May. This has made it impossible for us to be at all helpful to established branches, since their last meetings for the year are generally held in May or June. It has also made it difficult for us to seek the organization of new branches.

This delay in the organization of the various committees of the Association is a distinct hindrance to its effective work and leads us to suggest that since the President elect, under present conditions of election, has several months notice that it should be expected of him to have his full list of appointments ready for announcement when he is inaugurated and that such announcement be a part of the inaugural ceremonies.

As important and worthy of inclusion in this report, we offer a letter under date of January 8th, addressed to Mr. Joseph W. England, Secretary of the Council, to the Council representatives of the various branches and in addition we offer extracts from replies received by Mr. England to whom we are in debt for all this valuable matter.

Mr. England's letter is as follows:

From letter of J. W. England to Council Representative, Branch, A. Ph. A.:

At the final general session of the Detroit meeting (Journ. A. Ph. A., 1914, 1495), the following resolution was adopted:

"The recommendation of the president to reduce the number of members necessary for the organization of a local branch from twenty-five to fifteen, and that the Chairman of the Committee on Local Branches should provide a bulletin to be issued to the local branches suggesting topics of importance for discussion."

As the first part of the above resolution is in conflict with Chapter XII, Article 1, of the By-Laws, on Local Branches, and these were not amended at the meeting, it is, of course, inoperative; the latter part of the resolution, however, is in full force and effect.

President Mayo has not yet appointed the Committee on Local Branches for 1914-1915, but will do so shortly, and the committee will then doubtless issue bulletins and send topics for discussion to the Local Branches.

In the meanwhile, the thought has occurred to me that it might be well if we could devise some scheme to encourage and co-ordinate the work of the seventeen different branches. How would it do for the Committee on Local Branches to select six or more subjects for papers each official year, or ask six or more experts to select subjects, and have each one write on the subject he selects? Then, each month, seventeen copies of the paper for the following month could be sent to the local branches (with the exception possibly of the local branch to which the author belongs). Each branch would then receive, each month, an original paper from an outside source, which would stimulate attendance and stimulate the work of the local branch.

It must not be forgotten by those of us in the large cities that the members of some of the local branches do not have the extended facilities for research work in pharmacy that members of the larger cities have, and hence cannot prepare comprehensive programs, but if they could have the assistance of the members of the Association at large, they could make their programs more appealing to a larger number of their own membership.

With the nearly 3000 members of the Association—and leaders in all lines of pharmaceutical research—it should not be difficult to get six members of the Association, each year, to write a paper for the Branches, especially in view of the wide publicity that would obtain for the writer. The Branches as a rule, do not have more than six meetings a year and the papers could be upon scientific, educational, legislative, historical or commercial topics, as deemed best by the Committee on Local Branches.

Of course, the danger may be that the members of the Local Branches who write papers may "lay down on their jobs" if the Branches receive outside assistance in securing papers, but I do not think so. I believe that the service proposed would stimulate research instead of repressing it.

Furthermore, it seems to me that the Committee on Local Branches could well adopt the admirable plan used by Chairman E. Fullerton Cook this year for the Philadelphia Branch of having presented each month at the Branch Meeting a systematic "Review" of current pharmaceutical journals of the previous month. This has been well received at the Philadelphia Branch meetings, and one "review" could serve for each of the seventeen Branch meetings.

The suggestions above made would not interfere in any way with the resolution of the Association that the Committee on Local Branches send bulletins to the Branches suggesting topics for discussion; in fact, they would be really supplementing and strengthening the work of the committee.

Will you make inquiry of the members of your Branch and ascertain how they are impressed by the above suggestions? I have no desire to suggest anything that will interfere with the individual work of each Branch; my only thought is to utilize the great ability of the members of the Association at large for the benefit of the members of the local Branches.

The replies are in part as follows:

E. H. Thiesing of Cincinnati Branch:

"Your suggestion with regard to having six experts write papers on selected subjects, these to be read at the Branch meetings during the same month, appears to me an excellent one. Together with the topics offered by the new committee, it will form the nucleus for a year's program that will not only co-ordinate the work of the Branches, but will encourage them. Have spoken to some eight of our members, all of whom view the matter in the same light.

"To have something special during the winter, was in mind when the program for the Cincinnati Branch was prepared. It provides for a paper by some well-known person in Pharmacy each alternate meeting—the meeting between being reserved for papers and discussions by local members, and reports of committees, one of which is a review of current pharmaceutical journals under the title of "Progress of Pharmacy."

The special papers for the year are from Prof. John Uri Lloyd, Prof. C. T. P. Fennel, Dr. Beal, Dr. Anderson, Dr. A. O. Zwick, Frank H. Freericks and Julius Greyer.

S. L. Hilton, District of Columbia Branch:

"You are doubtless aware that the conditions here are probably different from those of any of the other Branches; it is impossible to interest the retail pharmacist, other than six or eight, but we have no trouble in interesting the many scientists in the Government service and have succeeded in securing many valuable papers; we, therefore, have to continue along these lines if we may expect to do anything and accomplish any work of a scientific nature."

J. M. Rogoff, M. D., Nashville Branch:

"The suggestions made in your communication meet with the hearty approval of all who are interested in the progress of pharmacy, and I am sure that "outside papers" could have nothing but a good effect on the interest of the local members, and would not depress their present efforts in research.

"I have attempted to incite the interest of our local members by giving a series of papers, discussing the methods and simpler tests applied in physiological chemistry. My first paper was read at the February meeting and I considered the simplest methods of gastric analysis, showing how the pharmacist could do this kind of work for the physician and add a profitable 'ethical side line' to his store. The younger men in the profession (non-members) were invited to be present, and Dr. Ruddiman invited the students of the Pharmacy Department of Vanderbilt University, who were also in attendance.

"I believe that this paper awakened the interest of a number of the more intelligent pharmacists and particularly the younger men who are being better trained than some of the older men in the profession and that it has merited an attempt on my part to prepare another paper in this series to follow up the first one."

Frederick J. Wulling, Northwestern Branch:

"I like the suggestions embodied in your letter immensely and will bring the matter before our next Branch meeting."

CHAS. T. P. FENNEL, Cincinnati Branch:

"We aim to have two or three illustrated lectures on subjects of interest to all, but without discussion. The last lecture was given by myself in November, 1914, History of Chemistry, with about seventy-five slides. The subjects for discussion are selected from topics selected by individual members for elaboration and obtained through a committee of three. In response to the request of the committee, subjects for at least six meetings have been obtained. Last year I had charge of Progress in Pharmacy, but we had so many topics for discussion that only one meeting was devoted to the department. This year Mr. Jones has charge of this department, the first installment to be presented at the coming meeting, January 12, 1915. We devoted one evening to discussion, "History," by Prof. Lloyd. Preparations and Assays by Theo. Wetterstroem, Merrell, Jones and myself. Recent Phar. Legislation by Mr. Freericks, and general discussion. Illustrated Lectures by Dr. A. O. Zwick without discussion. In all these programs no written papers were presented, although the authors had 'follow-up' notes.

"I believe your suggestion of exchange papers could be worked up with general benefit. I shall present the matter to the Association at the next meeting."

H. M. WHELPLEY, St. Louis Branch:

"I read with much interest your letter of November 18, regarding local branches. I hope you will work out a scheme whereby we will have greater co-ordination between the branches. Some one should keep tab on the branches. As it is now, they seem to grow up very much as did Topsy. They can be seriously ill without professional attendance and care and even die without its being observed.

"I like your plan of having papers written to be read at the various branches."

In our opinion, the suggestions of Secretary England and his interested correspondents offer much that will be helpful to our members.

The status of the local branch has received the serious thought of the Chairman, especially in relation to the correlating of the various important pharmaceutical organizations, both state and national, also when considering the size and the personnel of the Council membership. In his opinion the local branch has a place of great usefulness in the Association work. They are, or should be much like the various sections, neither administrative nor executive, but forums upon which developing discussions may be held, the conclusions from which may be carried into the several sections. Like the Sections, it would seem they should continue to have representation in the Council, which will in all probability become the executive body of the Association for the concentration and crystallization of the instructive work of the organization.

To offset the claim that the Council is too large, the opinion is offered that the Council cannot become too large, if each member represents a distinct unit peculiar to itself. It can only become too large, and is already too large, for its proceedings to be conducted by mail.

The several annual meetings should be held and *ad interim*, its affairs, administrative and executive, should and must, it is thought, be left to an Executive Committee of not more than seven members. This is offered to the Committee in answer to the question: "Shall the local branches continue to hold membership in the Council?" and we answer positively, yes! (Signed) H. P. HYNSON, Chairman.

Chairman Hynson then stated that the suggestions of Mr. England were well worthy of consideration and that they had the endorsement of a number of the council members of the different branches, and he thought that while it would take quite too much time to read all the recommendations, that in his opinion they should be referred to the Commitee on Publication for revision and publication; that he, Mr. Hynson, personally thanked Mr. England for his good work and he hoped that every member would do likewise.

Further extracts were read from the letter of Mr. England, and Mr. Hynson suggested that the writer ought to have the privilege of re-writing the report.

The Chair then stated that the session would give the author that privilege, further stating that the session would then hear from the Committee on Organization of Branches, asking whether they had any recommendations.

Mr. Hynson suggested that the only recommendations were simply those em-

bodied in Mr. England's suggestions; that the other members of the committee endorsed them; and that the Committee on Local Branches was seeking papers which would be distributed to the local branches; stating that he believed the chairman requested that it be referred to the committee for publication; that if the idea met with favor that the present Committee on Local Branches should be authorized to carry it into effect next year, whatever committee was appointed. Inasmuch as they had seventeen local branches that they could get a half a dozen of national representatives, each one to prepare a paper, someone with national reputation, of more than usual importance; that seventeen copies could be stricken off and sent to the branches; that it would suggest a new feature; that it would be information from an outside source, in the nature of a message from a national source.

The Chair then stated that the idea was to stimulate research work and work along that line by co-operative work; that the suggestion offered in the Council letter by Mr. England had attracted attention generally; that it seemed to the Chair that the way to put it into effect would be to refer the recommendation with favorable endorsement to the incoming Committee on Local Branches of the American Pharmaceutical Association.

Mr. Hynson made a motion, which was duly seconded, that the report of the committee be accepted; that the recommendation regarding co-ordination of the work of the local branches be referred to the incoming Committee on Local Branches with favorable endorsement; the motion was carried, and it was so ordered.

Mr. England stated that his attention had been called to Rule Fourteen which pertained to the Committee on Invested Savings and Trust Funds, and moved that Rule Fourteen on invested savings and trust funds, third paragraph, be amended by deleting the words "in the annual volume of proceedings thereof," in the last line, and the following be substituted therefor: "In full in the Journal of the American Pharmaceutical Association."

Motion seconded; carried.

General Secretary W. B. Day then stated that the Chicago Branch at its May meeting recommended to the Association that they request the Committee on National Formulary to reconsider the deletion of all diarrhea mixtures in the Formulary, the idea of the Branch being that at least one of these diarrhea mixtures be retained. The Secretary stated that he was not altogether certain as to just what the practice was in that regard, but proposed that it should be referred to the Commitee on National Formulary.

In reply to which suggestion President Mayo stated that the Committee was a committee of the American Pharmaceutical Association, and would presumably carry out the wishes of the American Pharmaceutical Association. That such deletion affected the sale of popular remedies, and that it would have a very important bearing on the ordinances of New York City. It seemed to the Chair that it was a very grave thing to delete all of those preparations, as in the opinion of the Chair they had a legitimate field of usefulness; and that the matter should have careful consideration.

President Mayo then acquainted the session with the fact that it had been rec-

ommended by the Chicago Branch that the Committee on National Formulary be requested to reinstate at least one of the popular diarrhea remedies and that it was before the session for discussion and action, stating that Professor Scoville was present, and that the session would be glad to hear from him.

Mr. Wilbur L. Scoville stated that the real reason back of the proposal to delete the diarrhea remedies was based on the fact that they had a therapeutic name and the Committee on National Formulary voted to eliminate all diarrhea formulas; that it did not seem possible under the present arrangement to include them, so they were deleted; that not much consideration had been given to the legal point of remedies themselves, and that if the Association thought they had better remain, that matter could easily be adjusted.

Mr. Hynson then stated that in his opinion the Harrison Act had something to do with the matter, and put the question to Professor Scoville if it wasn't a fact that the deletion occurred after the passage of the Harrison Act and that that had something to do with it.

Whereupon Professor Scoville said, not so far as he remembered; that it occurred after the passage, but as he remembered it, did not have anything to do with it, but possibly that was a factor. Whereupon Mr. Hynson stated that in his opinion it was a factor.

Dr. Joseph Weinstein then stated that he believed the deletion of remedies of that kind was a mistake, because the pharmacists were restricted in the sale of narcotics. That so far as it concerned those diarrhea remedies having a minimum amount of narcotics, they would be allowed to be sold in the drug stores, had they been included in the National Formulary. The fact that they had been removed from the National Formulary would do away with a lot of sales which were allowed the pharmacist, occurring in the transaction of the pharmacists' legitimate course of business. The speaker thought that if there was any possible way in which they could be included in the National Formulary again that it would be a proper step in the right direction, because as the matter worked out at the present time the pharmacists were in many cases losers where legitimate sales could be made.

Professor Scoville then said that as one of the members of the National Formulary Committee and one who had voted to delete, his attitude regarding the point in controversy was, that in a very large number of the cases where opiates were contained, and according to the modern therapeutic dose, those things were not sufficiently indicated in those cases. The speaker thought the subject was a very broad one, and was possibly due more consideration than had been given by the Commitee, and thought a motion recommending deletion should be passed by the Committee, and stated further that as one of the members who voted for the deletion he would be in favor of taking action to restore. That the question presented two phases, first of all the consideration of the subject before the session, and second, the relationship of the National Formulary Committee, and that if the committee should receive orders from the Association, the speaker thought that every one would readily see that it was a dangerous precedent, but in this particular case believed that it would really be a suggestion from the Association and its influence would be very great and the speaker would vote for restoration.

Mr. Hynson then stated that they should be deleted because it could not be sold under the Harrison law; inquiring what was the use of having them in there if they could not be sold in the United States; and the speaker thought as a perfectly sensible and logical proposition that there was no use in having them in the Formulary if they could not be sold over the counter, and surely not, if they could not have the recommendation of the physician.

Whereupon Dean Wulling stated that that was his understanding, and stated that he concurred in the opinion of Dr. Hynson. That it was voted in Minnesota that the formulas be so modified as to come within the Harrison law; that that of course would not be the original formula, but closely approaching it. The speaker thought it was not necessary to reconsider because the prescription could not be sold except on order of a physician, but in the speaker's opinion it might be necessary for the American Pharmaceutical Association to do some reserach work on other formulæ to come within the law, if the trade required it, as Mr. Hynson suggested.

Mr. Osseward stated that he agreed with Mr. Hynson fully, that as long as the pharmacist could not sell it over the counter and that it could only be dispensed on a physician's prescription, that it would not be logical to restore; that if the physician desired it he could write out the entire formula.

The Chair then stated that the session would like to hear the views representative of the Chicago Branch as to what the Chicago Branch thought on that question.

Professor Snow stated that the idea, he believed, was advanced at the Chicago Branch that most of the members of the National Formulary Committee were of the opinion that most of the people who discussed these preparations were people from the cities, who did not appreciate the conditions of medical practice in the country. That while everyone agreed that if the physician desired to prescribe a preparation of that kind he should write the prescription, yet there were many who desired these preparations, who were not able to do so. He suggested that there were many physicians in the country who depended upon the Formulary, citing the instance of Squibb's mixture and preparations of that kind; that they became quite popular in the practice of medicine and the speaker believed that would not be denied by anyone. The fact that they had become so popular had lead the members of the Chicago Branch to ask a restoration and the retention of at least one of the preparations and possibly two.

The speaker further stated that no longer ago than April, Professor Remington in Chicago gave an indication of the value of those preparations, where he himself was forced into the practice of medicine in the absence of a physician, and claimed, while not exactly working a miracle, to have done wonders for an old lady with the Squibb's Cholera Mixture. Everything seemed to indicate to the speaker that they should retain them in the National Formulary; that if they could not be sold, the speaker urged, it certainly would do no harm to be embodied in the Formulary; that the physician who could use them on prescription would make good use of them.

Dr. George C. Diekman stated that he thought the argument of Professor Snow was a very sound one. If the other argument was a good one that they be deleted

from the National Formulary, pointing out that if they were eliminated from the Pharmacopœia they could not be sold either, and therefore he could not see why they should not all be deleted.

The speaker stated, however, that they should not be in the Pharmacopœia if they can not be sold under the Harrison law, but believed the point concerning the country practitioners very well taken; and reminded the session that a propaganda was widely afoot to get the physician to use the National Formulary and United States Pharmacopœia, particularly throughout the country districts; that it was the speaker's belief that the Association was trying to get physicians to use these books, and he, therefore, thought the preparations should not all be deleted, at least one of them retained.

Dr. Anderson then suggested that in his opinion a motion had not been made and that the whole discussion was rather irregular, and that he therefore desired to move the approval of the recommendation from the Chicago Branch, stating that he had never understood that the formulæ in the National Formulary were placed there for the purpose of having the preparation sold over the counter to the public; that it had always been his idea that they were for the physicians' use, and that the propaganda of the American Pharmaceutical Association had been along that line, namely, to get physicians to use the N. F. and U. S. P. That where they did not want to go to the trouble of writing out certain preparations they had access to some ready formula in the National Formulary which they could prepare; that in the speaker's opinion it was something that the physicians needed, and that he believed that it was at least proper to ask the Committee to reconsider the proposition and if possible have them conform to the recommendation of the Chicago Branch, endorsed by the Association.

The motion of Mr. Anderson was seconded.

Thereupon Mr. Hynson offered a substitute to the motion, viz.: That the matter be referred to the Section on Practical Pharmacy and Dispensing, where he believed it belonged; and therefore, the speaker suggested, he would place his thought in the form of a substitute to the motion, that it be referred to the Section on Practical Pharmacy and Dispensing, where he stated the report of the Committee on National Formulary went for further consideration.

The seconder stated that he had just talked to Chairman Osseward, and stated that Mr. Osseward thought that the proper place for the matter was in that section.

Thereupon Dr. Anderson stated that he would willingly accept that amendment.

Dr. Wulling then stated that it struck him as hardly necessary, as the views had been generally expressed rather fully in the session then in progress, and that in his opinion it could not be gone into any further, unless the speaker was in error. He could not see the practicability of postponing the matter by referring it to another section, inasmuch it could not be decided upon until it again came to the general session for action.

The Chair then stated that it was apparent that the general session had a perfect right to pass upon any subject it chose, and that there would be no impropriety in considering it at that time before the session then in progress, no objection whatever in taking definite action or the alternative of referring it to the Section

on Practical Pharmacy and Dispensing; but the Chair reminded the session that there were two motions before the house, the original motion to recommend to the Committee the compliance with the request of the Chicago Branch and the substitute motion to refer the matter to the Section on Practical Pharmacy and Dispensing; that it was entirely in the province of the parent body to act on the proposal, and that it was also entirely appropriate to vote on the substitute motion, the motion of Mr. Hynson, and therefore he put the question, which was carried in the affirmative, Mr. Hynson being the only dissenter. (Mr. Hynson desired that his vote be recorded.)

The Chair then stated that the body had arrived at the point where it was necessary to take some action on the original motion, and stated the original motion to be that the general session of the American Pharmaceutical Association request the Committee on National Formulary to reconsider its action in deleting all the diarrhea mixtures and to take into consideration the request of the Chicago Branch; putting the question, it being recorded that the ayes had it.

Mr. Hynson then stated that he desired to rise to a point of personal privilege, and the Chair stated that the floor was Mr. Hynson's.

Mr. Hynson then said that he desired to point out the reason he desired action on the matter was that he had great love for pharmacy and great respect for it, and he wanted pharmacy to be respected by other professions, and he thought the deletions of these mixtures, which the speaker said were obsolete and unscientific, constituted a direct reflection on the American Pharmaceutical Association. The speaker said he hoped that the assemblage would think about the subject and hoped that it would take it to heart as he felt that they had slapped the committee in the face, who, the speaker thought, had taken a step which was very creditable to the American Pharmaceutical Association and creditable to the Committee on the Revision of National Formulary, and the speaker added, that he was very glad to go on record in that particular way in which he did.

Dr. Rufus A. Lyman then stated that he desired to call attention, while supporting Mr. Hynson's idea, to the general trend that the general session was taking; that the night previous there was brought before the House of Delegates in the session a recommendation to the American Medical Association that they do something more than they are now doing to introduce prescription writing into the medical school in order that medical men might be better prepared to write prescriptions.

Dr. Anderson then stated that it appeared to him that the House of Delegates in taking the action it did and the association taking the action contemplated, that it was acting very consistently; that the association was calling the attention of the medical profession to the fact that the men in the medical profession today did not know how to write prescriptions, and that therefore that they become better equipped in methods of prescription writing; that the Association was calling upon the American Medical Association to make provision in their colleges to have the future physicians write these technical prescriptions so that the pharmacist could do away with the formularies.

Mr. Hynson then stated that he desired to know whether Dr. Anderson knew of any reputable physician in the State of New York who was prescribing these

diarrhea mixtures, whereupon Dr. Anderson stated that there were hundreds of them, and that he could take Mr. Hynson to his prescription files and provide Mr. Hynson with the names of some of the most reputable physicians in Brooklyn. Mr. Hynson stated that the situation did not exist in Baltimore.

Secretary W. B. Day stated that in the Council they had the pleasure of listening to a splendid report by Dr. Beal for the Commission on Proprietary Medicines. The Commission presented a number of definitions for proprietary medicines so as to classify them, and as he recalled, one of the definitions included the use of the name which indicated the disease for which the medicine was to be prescribed. That it occurred to him that there was just a possibility that the Association might put some of its N. F. medicines in the class of patent medicines if there was a retention of the names covering the diarrhea medicines, and suggested that the National Formulary Committee not reconsider the matter but try to change the name so as to avoid the therapeutic name.

President Mayo then stated that there was special business on the program, had been on it for a number of years, but had never been carried out, the feature of the introduction of new members to the Association; the Chair adding that it was highly desirable that there be as much personal intercourse between the members during their stay as possible, and highly desirable that all members acquaint themselves with each other.

The Chair then inquired whether there were any members who had not attended the meetings heretofore, and thereupon the following were introduced: J. M. Bladen, of Cedar City, Utah; J. C. Buckner, of Galveston, Texas; J. H. Brinker, of Bellevue, Ohio; Hugh B. Secheverell, of Denver; E. C. Eaton, of San Francisco; W. H. Cousins and C. Benkma, of Dallas, Texas.

President Mayo further suggested that this procedure went down as part of the proceedings of the session, had never been carried out before, and thought it was a good feature.

President Mayo then stated that he took extreme pleasure in introducing to the assemblage Dr. Morgan, of San Francisco, or rather of Half Moon Bay; also J. L. Lengfeld, of San Francisco, stating that Dr. Lengfeld was a very good member.

General Secretary W. B. Day reinforced the statement by adding that Dr. Lengfeld had brought in many new members, and the Chair added that Dr. Lengfeld's name was familiar because of his having acted in the capacity of proposer of new members.

Espying some ladies in the rear of the room, the Chair inquired whether they were new members; and Dr. Anderson suggested that it would be very well in any event that the ladies be introduced.

Dr. Hynson then arose to say that he desired to introduce a lady, a very fine lady, a graduate of pharmacy with high standing and a member of the American Pharmaceutical Association, also from Baltimore; adding that in his opinion the lady was too modest and evinced the hope that everyone would meet her.

Mr. Hynson then introduced Miss Ollie Kohl.

The Chair then addressed Miss Kohl, stating that he welcomed her to the membership of the Association and trusted that she would call upon any of the members at any time for any service they might be able to render, and that they would all be at her service.

Mr. Dawson arose to state that Mr. Morgan would like to say something about the trip to Half Moon Bay.

Mr. Morgan then stated that Mr. Dawson was wrong in saying "Trip to Half Moon Bay," but if a number of eastern visitors would like to make an automobile trip covering a period of five hours, taking the entourage to Stanford University and back, that Mr. Morgan would be glad to make arrangements for some of them.

Dr. Morgan said that by leaving San Francisco at 8 o'clock in the morning the party could be back at 1 o'clock and that it was a very beautiful trip through the peninsula, to Stanford University; that it happened that the speaker was a commissioner at the exposition and could promise everyone free automobiles for the trip.

A motion was then regularly made to adjourn, being duly seconded and carried, declaring the second general session adjourned until Friday, August 13, 1915, at 10:30 o'clock a. m., in the Red Room.

MINUTES OF THE THIRD AND FINAL GENERAL SESSION.

The third and final general session of the convention of the American Pharmaceutical Association was held in the Red Room of the Bellevue Hotel, San Francisco, California, on Friday, August 13, 1915, at the hour of 11:30 a. m. President Caswell A. Mayo called the meeting to order.

The Chair stated, before proceeding with the business of the general session, that a Council meeting would be held immediately after the adjournment of the third and final general session to dispose of one or two items left over.

The Chair then called upon Secretary W. B. Day to read the minutes of the second general session, which was done.

The Chair then inquired whether there was any further correction in connection with the minutes, and there being none, the Chair announced that the minutes stood approved as read.

The Chair then announced that the reading of the minutes and the presence of certain persons in the room directed his attention to some unfinished business holding over from the first general session, and President Mayo then called upon Mrs. White, the President of the Pacific Coast Women's Pharmaceutical Association, to tender the greetings of that body.

Mrs. White then thanked the membership present in the name of the Pacific Coast Women's Pharmaceutical Association for the kindness of being permitted to address the American Pharmaceutical Association; and further that it gave her an opportunity of thanking the editors of the various pharmaceutical journals for their kindness in always publishing anything in the shape of notice or editorial that had reference to their organization.

President Mayo then stated that the Association had with it the Local Secretary of the California Association, who officiated at the meeting of the American Pharmaceutical Association held in San Francisco in 1889, and took great pleasure in introducing Mr. Edward W. Runyon; and remarked that to those who had the pleasure of being in San Francisco at that time and partaking of the hospitality that was so freely dispensed by the members of the local organization, the hope

of a repetition of that hospitality largely influenced the Association in again selecting San Francisco as the place of meeting.

Mr. Runyon said that President Mayo always tried by some art or device to get the speaker on his feet; but that he was happy to be again in dear old Frisco, where he landed thirty-seven years ago; and rejoiced that at his side was an old pupil of his, Mr. Gato, of Merced. He called attention that wonderful San Francisco with its beautiful buildings and artistic spots was a transformation of a place he once knew where the streets were covered with planks, paved in that old archaic style, with the planks placed on top of the sand, and at that time the fleas were as numerous as the grains of sand. He reminded his listeners that it took him back to a picture of that hard-working little band of fellows who worked so heroically back in the early '70's and early '80's to help make pharmacy what it was today; alluding to Emlen Painter, James G. Steele, John Calvert, W. M. Searby, Professor Wenzell, and last but not least Dr. Herman Baer, all since departed, and that the speaker was the only one remaining of that aggregation.

Mr. Runyon further stated that the Association at that time honored him with the office of Local Secretary and if he recollected aright the local delegation raised a fund approximating $6,000 to entertain the Association; and that he in company with Dr. Melvin, one of the druggists of Oakland, were delegated to make a trip to the northern part of the state and the Pacific Coast as far as Oregon to raise money with which to entertain the Association. It was his recollection that about $1,500 was raised among the local druggists, and he was sure that anyone present at that time within the hearing of his voice would recall the very fine entertainment and great time accorded the visitors at the Palace Hotel in San Francisco, and said that Mr. Dawson was one of the valiant band, and the speaker felt that he was almost a stranger; and that but a few scattered ones remained of the old timers.

He thanked the Association for the opportunity of saying a few words and appearing before the Association on this occasion.

The President stated that in his estimation one of the happiest results and one which boded good for the future of the American Pharmaceutical Association, was the fact that the Association retained the loyalty and love of the men who worked so hard for the Association in its youth and in their youth; and who came before the Association in their mature years still indicating great loyalty to the it and its work.

The Chair called the attention of the session to the fact that it had with it delegates from the Association of Manufacturers of Medicinal Products, and called upon Dr. A. R. L. Dohme, of Baltimore, to extend the greetings on behalf of that organization.

Dr. Dohme stated that it afforded him great pleasure to convey to the Association the best wishes and a plea for hearty co-operation on behalf of the National Association of Manufacturers of Medicinal Products.

That many years ago, and in fact until comparatively recently, all the manufacturers of medicinal products felt that they were well taken care of at the hands of the American Pharmaceutical Association; that there was at that time no occasion for them to have an association of their own because the broad scope and

principles of the American Pharmaceutical Association gave them all the ideas to be desired, all that might be of interest and of importance to them, and to one another, and to the profession of pharmacy at large.

But that the advent of the Pure Food and Drugs Law and of the subsequent legislation in Nation and in State, which the speaker stated had become so very stringent and so very difficult and so very annoying to manufacturers in all lines, that the manufacturers felt that it was necessary for their own protection and for their own welfare to break away from the mother association to accomplish such specific work that might come before them in relation to legislation of various kinds, and that it was with a great deal of reluctance that they finally concluded to form an organization of their own and to have meetings of their own.

That the speaker did not wish to be understood by this that their love or their affiliation or their respect for the mother organization had by that action in any manner or degree been lessened; that the speaker thought that by that act the love and respect had been greatly increased because they realized the principles which underlie the organization of the American Pharmaceutical Association and which are so broad and catholic. The speaker really believed that every one of the members of the Association of Manufacturers of Medicinal Products regarded the Association with even more respect, caused them to appreciate even more than they did at that time, the great benefits and the great advantages to the profession at large that the American Pharmaceutical Association has produced during its very long and interesting career.

That he could only say that without exception this organization, since its beginning, meaning the Association of Manufacturers of Medicinal Products, had been a successful one; had been unanimous in all its actions; had been a success in accomplishing what it had set out to do; and the speaker said he believed that his association has reached, or nearly reached, a point in their relation with the legislation of the country, as a nation, which will make it difficult, or, rather more difficult than it was before, to have divergencies of opinion between legislative bodies and executive boards and between the manufacturer and the retailer.

That the speaker took great pleasure, in closing, in conveying hearty greetings and best wishes of the National Association of Manufacturers of Medicinal Products and hoped that the American Pharmaceutical Association would continue in its broad, big, noble career and continue to do the work, or even better work than it had done in the past. (Applause.)

President Mayo then assured Dr. Dohme that his listeners, as members of the American Pharmaceutical Association were delighted that the members of the National Association of Manufacturers of Medicinal Products looked upon the American Pharmaceutical Association as a mother organization, which, the President suggested he had reason to believe was one of the most valuable and potent influences, that of mother of associations. That it regarded itself the mother of the Association of National Manufacturers of Medicinal Products, the American Conference of Pharmaceutical Faculties and the National Boards of Pharmacy, which the President said had grown out of and was made up largely of the members of the American Pharmaceutical Association, each working in its particular field, and as the work went on giving especial attention to the particular phases affecting each organization.

The Chair then announced that there was in the hands of the Secretary a letter of greeting from the California Drug Clerks' Association and a telegraphic greeting from an absent member, Dr. George F. Payne. That the next order of business before the Association was the reading of the minutes of the Council, and the reading of the letter from Mr. Redington of the National Wholesale Druggists' Association, the results of whose work the American Pharmaceutical Association had seen during the time that Mr. Redington served on the local committee.

Thereupon the minutes of the Council were read by the Secretary of the Council; the minutes were approved seriatim by section; the Secretary of the Council also read the minutes of the sixth session, which were approved on motion by Mr. Nitardy, seconded by Mr. Newcomb.

The Secretary of the Council then stated that he desired to bring up again the question of the amendments which were presented at the first general session, which were read in full, freely discussed, and that as a matter of form, in accordance with the by-laws, expressed the opinion that they be adopted at that time or rejected; which on motion by Mr. England, seconded by Mr. Newcomb, motion carried, were declared adopted as read.

The Chair then called upon Mr. Weinstein, the Secretary of the House of Delegates, for a report of that body, in response to which Mr. Weinstein stated that he had no report, but that the Association might be desirous of hearing from the newly-elected chairman. Chairman Hynson then stated that the Secretary had definitely requested of the general session on order of the branch at Denver that it authorize the incoming President to appoint a committee of five to investigate thoroughly the question of prescription pricing, the cost of material, the overhead charges and everything in connection therewith, the character of help required, and, in fine, everything in regard to prices of prescription and the possible percentage that should be added and reported at the next meeting; and therefore added that he desired to move that this recomendation or request of the House of Delegates be adopted by the general Association, which, upon second by Mr. Nitardy, carried, and was ordered done.

The Chair then requested Vice-President Charles Gietner to take the chair, as the President's modesty prohibited him from presiding under the painful circumstances about to be inaugurated, namely, the reading of the report of the Committee on the Address of the President.

Mr. Godding then presented the report as follows:

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

To the Members of the American Pharmaceutical Association:

We beg to report on the recommendations contained in the address of President Caswell A. Mayo delivered at the opening session of this convention as follows:

We heartily approve of recommendation No. 1 that all unnecessary ceremonial addresses and replies be eliminated from our proceedings as we believe that such procedure greatly aids in expediting the business of the convention.

We also approve of the second recommendation that the Committee on By-Laws be instructed to present for consideration provisions that the minutes of the Council shall not be read in the general session, but that the acts of the Council be outlined, and that on demand of any two members full information regarding such

action shall be presented to the general session, and that acts of Council shall be subject to review by the general session.

We also most heartily approve of recommendation No. 3 that the incoming President be instructed to appoint a committee of fifteen on the cultivation and collection of botanical drugs with an especial view toward the cultivation of indigenous drugs now going to waste.

In view of the fact that President Mayo elaborated a comprehensive scheme for work of such a committee we recommend that the incoming President will give due consideration to this work done by Mr. Mayo and appoint him as chairman of this committee, if such course will meet with his approval.

We further approve of recommendation No. 4 that the Committee on the Status of Pharmacists in the United States Government Service be instructed to draft and seek the passage by Congress of a bill providing for the creation of a corps of highly educated, expert pharmacists, whose duty shall be to direct the medical supply service of the United States Army and to continue their efforts to obtain higher pay and rank for the pharmacists now in the service.

We also approve recommendation No. 5 that a committee be appointed by the President to draft and present to Mr. Samuel W. Fairchild suitable resolutions of thanks for his generosity in having established an American scholarship of pharmacy.

We also most heartily approve of recommendation No. 6 that the General Secretary be instructed to lay the plan of associate members of the branches before the officers of the branches instructing them as to what steps should be taken by any branch desiring to provide for associate membership.

Respectfully submitted,

The Committee on President's Address.

(Signed) C. OSSEWARD, Chairman.
W. H. COUSINS.
JOHN G. GODDING.
E. H. THIESING.
F. W. NITARDY.

President Mayo then again resumed the chair.

Mr. Godding stated that there was a recommendation by the Committee on the Status of Pharmacists in the Government Service, which was covered by recommendation No. 4.

President Mayo then stated that the matter was open for discussion: Sergeant Hamner then asked for the privilege of addressing the convention, apologizing that it was the first time he had attended a meeting of the Association, and that he thought such a person should be seen but never heard, but that he desired to outline the conditions existing in the United States Army affecting pharmacists and men in the Hospital Corps, making a plea for the assistance of the Association in aiding the men in the army service, giving a lengthy history of the work previously done to secure better pay, and going into the qualifications, which he assured the Association were of a high character; the army service requiring of its men engaging in pharmacy work the passing of examinations at frequent intervals to test their knowledge.

The Chair then stated that he was very happy that Sergeant Hamner had misunderstood him, that is to say, the tenor of the President's suggestions as contained in the President's address, because it gave Sergeant Hamner an opportunity of stating on the floor what never had been stated before so succinctly and so thoroughly and so ably, the duties which were performed by the members of

the Hospital Corps. That the Chair did not lag behind anyone in his appreciation of Sergeant Hamner's able exposition of the subject, and thought there was a slight misapprehension with respect to the recommendation contained in the President's address; that the Association had tried to get the recommendation of the corps as now constituted and the President hoped the good work would continue. And added that he desired, with the permission of the chairman of the Committee to make a slight addition to the report of the chairman adding to the recommendations that the good work and results obtained be prosecuted further and that the Committee continue their efforts to obtain better pay and grade for the men now in service, and trusted that it would meet with Mr. Hamner's approval. That certainly the efforts of the Association on behalf of the men in the army service should be continued; that it was not antagonistic to the work of the Association, and it was the Chair's desire that the suggestion be added to the report and trusted it would meet with Mr. Hamner's approval, and stated it was certainly the intention of the Chair originally to have such a recommendation emobdied in the report.

General Secretary Day stated he desired to add a word since he was chairman of the Committee on Status of Pharmacists in Government Service for two years, and during that time the Hughes-Bacon Bill, which the Secretary stated was the bill Mr. Hamner had reference to, was introduced.

The Secretary thought that the members of the committee who had intimate knowledge of the facts of the matter would agree with the General Secretary and concur in the statement that in order to work advantageously and get anywhere it was necessary to work in connection with the Surgeon-General of the Army and the Committee certainly tried to do that. The chairman of the committee to be appointed by the incoming president would immediately, or should immediately, and the General Secretary had no doubt he would, get in touch with the Surgeon-General of the Army. While it was the view of the General Secretary that the Surgeon-General could not initiate the bill, he could in an informal and unofficial, but very effective manner, assist its passage. Along the lines of the recommendations of the Surgeon-General to the Chief of Staff was the best chance for success.

The Secretary then submitted the following motion adopted at the joint session of American Conference of Pharmaceutical Faculties, National Association Boards of Pharmacy and Section on Education and Legislation, which was ordered referred to the general session for action.

That a committee of five be appointed by this Association, that said committee be authorized and empowered to submit to the A. M. A. a request for co-operation between the two bodies, by asking for the appointment of a similar committee, for the purpose of working along the lines suggested in the paper by Prof. J. P. Remington.

E. L. NEWCOMB,
Secretary Pro Tem., Joint Session.

Motion carried.

The Chair then stated that there was before the session for consideration the report of the Committee on Time and Place of Meeting.

The report of the committee was then read and is as follows:

REPORT OF COMMITTEE ON TIME AND PLACE OF MEETING.

The Committee appointed to report on time and place of meeting has received invitations from the following places: Galveston, Texas; Omaha, Nebraska; New York City, N. Y.; Atlantic City, New Jersey; New Orleans, Louisiana; Niagara Falls, N. Y.; and St. Louis, Missouri.

Your Committee recommend Atlantic City, New Jersey, as the place to hold the next meeting of this Association. The time to be fixed by the Council as in their judgment would be the best.

An urgent invitation has been received from the pharmacists of Maine, to hold the annual meeting in 1917 in Kineo. They are desirous of celebrating the fiftieth anniversary of the founding of the Maine Pharmaceutical Association.

In selecting Atlantic City, New Jersey, the Committee believed that the 1916 meeting should be held in a locality not visited for some years and in the section convenient to a large proportion of the membership. The hotel accommodations are ample and the other attractions of the resort appeal to the Committee in making its decision. It further feels that a large attendance will be secured with resulting increase in membership; and also that we are reasonably sure of cool and comfortable weather. Respectfully submitted,

The Committee on Time and Place of Meeting.

(Signed) JOSEPH P. REMINGTON, Chairman.
OTTO F. CLAUS.
PHILIP ASHER,
F. W. NITARDY, Secretary.

Mr. Nitardy moved that the report be adopted, and the same being duly seconded and the motion carried, it was so ordered.

Secretary Day then stated that the resolution adopted on the request of the Joint Session for co-operation between the American Medical Association and the American Pharmaceutical Association, was the result of suggestions in the paper of Prof. J. P. Remington, entitled "Co-operation a Necessity, Why Should There Not Be Co-operation Between the Pharmaceutical and Medical Professions in This Direction?" carried with it the appointment of a committee. Mr. Freericks asked that the request be complied with and that the President be requested to appoint a committee, which on motion regularly made and duly seconded, and carried, it was so ordered.

The Chair announced that the next order of business would be the reading of the report of the Committee on Resolutions, and is as follows:

Your Committee on Resolutions reports that it has had but three subjects referred to it. One is the report of the Committee of the Council on the "representation in and the function of" this body. This, we recommend, should be read in connection with the report of your own committee on the same subject.

The other subject, "Prescription Writing by Physicians," to which our attention has been called by the Nashville Local Branch of this Association, is one in which the American Medical Association has already shown and taken great interest.

Your Committee advises that the objects of the resolution submitted by the Nashville Branch can best be advanced by the adoption of the following preamble and resolution:

WHEREAS, The members of the House of Delegates of the American Pharmaceutical Association view with pleasure and satisfaction the desirable and helpful effort now being made by the American Medical Association to generally improve

prescription writing by physicians through the more general teaching of the subject in medical colleges. Therefore, be it

Resolved, That the House of Delegates of the American Pharmaceutical Association heartily approves this campaign and requests the American Medical Association to continue its promotion until its objects have been accomplished.

Mr. Nitardy then moved that the resolution be adopted, and upon second by Mr. Newcomb, the motion was declared carried, and it was so ordered.

Mr. Freericks then said:

"Mr. President, it seems to me, that we, who have spent the last week in the city of San Francisco and State of California, have had, all of us, the most delightful week we have ever spent in our lives, and I think the California State Association and the San Francisco Local Association and the Local Committee are deserving of our appreciation for what they have done in the way of entertainment, not only to the membership proper but more particularly for the ladies we have had with us, and I do not know but what they were in a measure responsible for the very nice weather we have enjoyed, and I move you, Mr. President, that we extend to all these bodies our most hearty appreciation of thanks for their hospitality."

President Mayo then stated:

"It is with warm personal feeling that I rise to put this motion. I had thought myself that it was a wonderful country, a wonderful privilege to be here, a most wonderful city.

We come here and we find a city new and bright, keen, alert and going about their business with the spirit that knows no bounds, in a locality where only lately all was leveled with ashes and where only a few years ago there were Indians running over the plains.

I see that native sons rather sneer at the thought of there being Indians here at one time. You cannot remember that far back, but my father, as I told you before, rode out here on horseback from St. Louis to Sacramento, he followed the trail, and many a time he would go into the experiences of those adventurous days; and while he would not say very much to us boys about it, because he was afraid we would get the wanderlust and the desire to see strange countries and fight Indians and dig gold, he was not prone to embark upon the subject and dilate upon it very extensively, but once in a while when some old friend came to visit him they would sit up nights discussing and reminiscencing, many times until past midnight, and you couldn't get us boys to bed.

The Chair then asked the session to sing a verse of My Country, 'Tis of Thee, the assemblage standing; and responded to the sentiments put forth by "Our friend from Cincinnati," by saying that all would feel towards San Francisco and San Franciscans always great gratitude, and amid applause a standing unanimous vote of thanks was taken.

Chairman Thiesing of the Commercial Section then suggested that there were certain recommendations by the Commercial Section that he did not believe had been handed in in concrete form; that the first was to conserve to the retail pharmacists of the country the opportunity to manufacture U. S. P. and N. F. formulas; and that there had been several recommendations and that it was recommended that a committee of five be appointed to confer with the manufacturers or their accredited representatives to that end.

President Mayo then stated that it was his opinion that matters would be expedited by the taking up and acting upon of Chairman Thiesing's suggestion to the effect that the President of the Association appoint a committee of five to confer with the manufacturing houses with a view to conserving to the retail pharmacists the manufacture of U. S. P. and N. F. formulas; and upon the same being duly seconded, it was so ordered.

Chairman Thiesing of the Commercial Section then stated that the second recommendation was with regard to an effort to have an understanding with dispensing physicians, that a plan was outlined and that the recommendation was that a committee of five be placed in charge of the subject; that the outline was only a partial one but it took in testing this question out in two separate places, one in a fairly large city and one in a smaller-sized city.

Chairman Thiesing then read one paragraph of the outline to better acquaint the Association with its tenor. He elaborated by stating that it had been taken up and recommended to the committee of five, and that he would, therefore, move the approval of that recommendation and that a committee of five as recommended be appointed by the incoming President; the chairman believing that this was one of the most important things that had come to the general session from the Commercial Section, and that it offered an outline of activity that could be splendidly taken up by the American Medical Association and would be more likely to bring results than most any other effort, further stating that he thought that the effort be made by the parent body; that he also understood the recommendation was with a view of not antagonizing or causing any ill feeling, but was made with a view to creating a better understanding along educational lines, and he hoped the matter would find approval, and, therefore, made the motion.

The motion having been duly seconded by Mr. Osseward, the same was declared carried.

President Mayo then inquired whether there was any further business before the Association.

Dr. Anderson then stated that he had not heard any report from the Section on Education and Legislation, that they had made some very important recommendations, that they should be presented before the body.

Chairman Freericks stated that the officers were present, but that unfortunately, although the Chairman was not certain, the recommendations were submitted to another general session, and the Chairman felt sure there was one recommendation made and he believed submitted, namely, the subject matter of Professor Remington's paper, a committee of five to co-operate. He believed there was one other matter, which it was the Chairman's understanding had been submitted to an earlier session, having in mind the endorsement of the Stevens Bill, but that if it had not been submitted that perhaps there was a misunderstanding on the part of the section officers. That there was an understanding in regard to the Stevens Bill that the approval of the Section would stand in a measure as the approval of the general session; but that if that was not the understanding Chairman Freericks desired to urge as Chairman of the Section on Education and Legislation that it be approved.

The Chair then put the motion, the same was seconded, and it was so ordered.

Chairman Freericks stated that he felt rather guilty about the matter, that he desired to say that the work in reference to the Stevens Bill and its endorsement came before the joint meeting of the Commercial Section and the Section on Education and Legislation, and that it had been the understanding of the Chairman that the Secretary had presented the matter to the general session and that it had been acted upon. He desired to say in justification of himself and his position as Chairman of the Section on Education and Legislation that it would have been a matter of great regret to him and to all, and would have regarded it very wrong to have omitted it.

The chair then stated that in view of the apparently divided responsibility, and in view of the fact that there was no further business before the session the installation of officers would be the next order, and he desired to call on some ex-Presidents, namely, E. G. Eberle and Dr. Whelpley. Mr. Eberle stated that it afforded him great pleasure to carry out the instructions of the Association in introducing to them the President for the incoming year, Dr. William C. Alpers, of Cleveland, Ohio.

President Mayo said, during the course of the installation, that in laying down the cares of the office which had rested lightly upon him and of which he had been very proud, he invested the incoming President with the insignia of office. Not having used the gavel during his term, consequently did not hand it to the incoming President, and that it was not necessary in calling the meetings to order to hit the members over the head, because of their promptness and exceeding kindness. He would pin the badge upon the lapel of the incoming President and give him the assurance that he would find the members of the American Pharmaceutical Association a most loyal body of men and women; men and women who would co-operate with the President to the fullest extent in carrying out the work of the Association. That he was sure the Association would find in Dr. Alpers a most able, prompt, efficient and energetic servant; and that all knew because of Dr. Alpers' many past services to the Association it was only fitting to crown the achievements of the President's career, and that he be given the highest gift and honor that could come to an American pharmacist. That he felt in turning over the office to Dr. Alpers it was going to a most worthy successor of a brilliant line of worthy pharmacists.

The President felt that the affairs of the Association could be left in Dr. Alpers hands with confidence; that he would leave the Association better, broader and richer for his administration.

President Alpers, in responding, said:

Mr. President, Gentlemen of the Association: In accepting this highest honor within the gift of this Association I am more than ever aware of my shortcomings. In fact, I wished this morning that this hour would not come.

There are moments in every man's life when he feels,—at least, in mine—that he is out of touch with his own work; that what he has done was wrong or was worthless or that he was misunderstood; and I had such moments this morning, I have them now, so if I speak to you I can do nothing else but tell you I feel in every instance, in all directions the shortcomings in my make-up, to preside over your body.

It is not that I undervalue, or underrate the high office; in fact, there is nothing that I could value higher than this honor. It is more gratifying to me because it comes to me in a year which is the twenty-fifth year of membership. (Applause.)

During these twenty-five years I have attended every meeting,—with a few exceptions—I have always taken active part in the transactions, in the debates, and many times stood in the midst of the fight.

I have always courageously stated my opinions; stated my reasons for or against this or that.

I know I have not always been right—no man is always right—but I have done my duty as a member of this Association wherever I saw it, irrespective of results. I feel that during these twenty-five years I have made some friends. I hope I have. I do not mean men who greet you with pleasant words and smiling faces but bear falsehood and malice in their hearts. I mean those who come to you with full and open heart, who when you meet them you think they tell the truth; men whose every word you believe; who when they say a thing you realize that they come forward hoping to enhance your own happiness, your own efforts and at the same time feel happy in these efforts.

During the twenty-five years, whatever I have done in the interest of pharmacy, whatever pharmacy may have profited by my work is but small compared with the profit I have derived from this Association. I do not know of any factor in my life, in my career that has interested me more, that has influenced me more for good than the attendance at these meetings.

I have always been an enthusiastic member. I will remain one to the end of my life, and when I recall the many excellent men with whom I have come in contact during this period I am almost ashamed and afraid to be called to this chair.

I recall men like Maisch, men like Curtman, men like Albert Ebert, who always were in the front of the fight, pitching in wherever they had a chance to do so, and such gentle and dear men as Prescott and Searby.

Then there was Thompson from Washington who wielded an enormous influence, who by a few words sometimes was able to turn the tide. I recall Dohme from Baltimore, Eliel from South Bend, and that excellent man, Charles Rice, who as pharmacist of the Bellevue Hospital in New York, where I lived was very close to me. I came in contact with him, perhaps, more intimately than others.

Now, gentlemen, when I think of these men and others whose names do not occur to me at the moment, think of the things they have done, think of the influence they have wielded for the good of pharmacy, I am ashamed.

I see them often now. Perhaps it is a peculiar gift to men like me afflicted with somewhat of a poetic nature to converse and counsel with men that others do not see. I can see them as I sit in my room alone in the darkness. Sometimes arising from the embers of the dying fire of the grate I have seen these men sitting around me. I have talked to them and heard their voices when I was in doubt about some things or when I wrote a paper on pharmaceutical matters, or wished to extract a strong opinion. I asked them, "What do you say?"

This mental communication is one of the greatest blessings derived from the men who went before us.

In religious circles we hear a great deal about immortality, that wonderful word that has a different meaning in almost every man's heart, and the conception of which is different in almost every man's mind.

To me, this mental reappearance of departed dear ones is immortality. They thus return to us, come forward to bring their thoughts, their ideas, their actions.

Let me add another thought: Let us all live, let us all shape our actions and our words here that we, too, may sometimes sit in that row; that some of the young men here whose names are little known now, but who listen to the older

men, who have ideals perhaps nobler and greater, grander ideas; that when they grow old they may also call the circle around them and that we may step into that circle.

That is true immortality. Perhaps I speak in a more serious vein on this occasion than is fitting; perhaps I should speak in a lighter vein; but my heart prompts me, somehow or other, to say what I have said. I can tell you that whatever I have derived from pharmacy through this Association has been grander and nobler than anything else. It has given me inspiration. I have never left this convention, the meetings, without taking away something, something noble, something grand, be it the friendship of new members, be it the stimulation of new thought, some new idea, some work along a new line; so I say, let us work along this line; let us every one perceive that it is the true and noblest work of the pharmacist, and I pray all of you, every one of you to help me to carry out these ideals during the next year.

I ask you all to give me your advice wherever I need it. Call me down whenever you see I am wrong. I will gladly listen to you, and now let me express my hearty thanks and appreciation for this honor. I promise you that I shall do my very best in the interest and advancement of this Association and of our beloved profession. (Tremendous applause.)

President Mayo: The incoming President has a rare combination, a gift of words and a gift of action. We can all feel that the program which he has so adequately inaugurated in words will be carried out in activity.

The installation of General Secretary W. B. Day, Treasurer Whelpley, Editor Eberle, H. V. Arny, member of the Council, was then proceeded with.

The Chair assured the session that it was with great pleasure that he placed before the Association the new officers and was quite sure that they would all serve the Association as faithfully in the future as in the past.

Mr. Freericks then arose and stated that he was really unfortunate in being compelled to rise again, but his excuse would have to be that there was a misunderstanding somewhat of the authority of the various sections as they relate to the general session. It appeared that there were a number of recommendations, brief ones, that were made by the Committee on Chairman's Address of the Section on Education and Legislation which should properly all come before the general session; and since Mr. Freericks believed they would only take a moment he asked that he be permitted to submit them, which was done; one having reference to the late regulation of the Internal Revenue Department under which prescriptions may not be refilled which contain a minimum quantity of opiates, which Mr. Freericks emphasized was a very important matter upon which the Association ought to go on record, principally in view of the fact that all were no doubt acquainted with its provisions. Mr. Freericks, therefore, moved that the following recommendation be adopted by the Association: That the Association go on record as protesting against the ruling of the Internal Revenue Commissioner under which it is held that physicians' prescriptions containing the minimum quantities of narcotics could not be refilled; the motion having a second, and the question being put, was declared carried.

Chairman Freericks of the Education and Legislation Committee then referred to the other recommendation which had reference to the stamp tax on toilet articles, it being generally understood that the revenue measure would likely be continued.

That the pharmacists of the country, particularly the retail pharmacists, would be called upon to unjustly defray a part of this added expense and tax, in the matter of having it apply to toilet articles, and stated that the Section on Education and Legislation recommended that the legislative committee of the Association be instructed to give these committees power to formulate opposition to the retention of that tax as it applied to toilet articles; and moved the adoption of that recommendation, which had a second and was carried. He further asserted that it would likely be a very serious matter and one that the executive committee could go into to formulate a change in the law, if it was re-enacted, to make it sure that the tax would be placed on the consumer; that that was done in the case of the Canadian War Tax; but that if the matter were referred to a committee, Mr. Freericks thought that action would be sufficient; that a burden would be imposed upon the pharmacists of the United States unless such a step were taken, and that it therefore seemed a very important matter.

On motion regularly made and duly seconded, the question put, it was so ordered.

The Chair then stated he desired to call attention to the fact that there would be a meeting of the Council immediately after the adjournment of this session in the same room; and that if there was no other business before the meeting, the Chair stated that it was with great regret, some pleasure and a little admixture of pride that he laid down his gavel. (Applause.)

Whereupon the Chair declared the sixty-third annual convention of the American Pharmaceutical Association adjourned.

Editorial

E. G. EBERLE, Editor.....63 Clinton Building, Columbus, Ohio

GREETING.

RETURNING from the recent meeting of the American Pharmaceutical Association to my home and daily work, I cannot but send a fraternal greeting from the fullness of my heart, to every member. Never before was I so proud of my profession, never before so thankful for my membership. Twice during the past summer I crossed the continent, starting from Cleveland, east to New York, from there west to the Golden Gate of the Pacific, and back by a different route to Cleveland. I saw unfurled before my eyes the immensity of our beautiful country, the richness of its golden fields of wheat and corn, the enchanting charm of its dark forests, the brilliancy and fragrance of its flowers; the gigantic majesty of its rocks and mountains, the impetuous torrents, and then the peaceful grandeur of its rivers; the terrific height and dazzling depth of its ravines and canyons; the solitude and barrenness of its deserts; the joyful life and wealth of its fertile fields. Many are the thoughts and feelings that rush to the traveller's mind, that grasp his soul, but out of their weird variety and multitude there are two that stand forth, strong and lasting,—the feelings of happiness and pride; the happiness of living in such a country, the pride of being one of its citizens. But the ardor of this pride and happiness was heightened by another benign and beautiful experience. Wherever I came, East or West, on the height of mountains or the monotonous level of the plains, in the crowded city or the lowly hamlet,—I found friends, pharmacists that extended to me the hand of fellowship and received me with warmth and sincerity. And to the pride of my country was added the pride of my profession, the happiness of being a member of the American Pharmaceutical Association.

What I had felt and known for years, I felt more deeply and earnestly than ever before,—that this Association is the truest source of inspiration for all that there is good in pharmacy, the very heart of American pharmaceutical life.

I wish I could impart this feeling to every member, fill his heart with the same happiness with which I return to my humble work, and imbue his soul with the same pride of pharmaceutical fellowship. But more than this. Happiness and pride are but empty thoughts if they stay dormant in our own hearts; to be real, they must come forth to action. They must help and strengthen the weak, encourage and fortify the timid, give speech and agressiveness to the diffident, incite them all to fruitful action and make them spread blessing around them. Thus let it be with us. Let us go at our work with loyalty and devotion, with strength and determination. Let it be our aim to follow in the paths of many exalted men that have built up this Association; let our hearts be filled with the desire to add in some way, during the coming year, to this source of strength and inspiration. Let us use all our energy to help this Association according to our ability, be it by

collecting and distributing knowledge, be it by helping the weak or failing, be it by doing pioneer work for its further spread, be it by enlisting our neighbor to membership. Let us all work together faithfully and harmoniously, and do good of some kind,—good for ourselves, good for our fellow pharmacists, good for our Association and our beloved profession.

William C. Alpers.

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THE SAN FRANCISCO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

DEMAND for the higher education of pharmacists with the view of establishing greater efficiency and better service; aspiration toward closer co-operation between related organizations that would increase their helpfulness for pharmacists, and the desire for knowledge of the true purposes of laws and regulations so that their effectiveness can be promoted in contributing dependable service and adequate protection of the public without needless and unwarranted restrictions, characterized the proceedings of the sixty-third annual convention of the American Pharmaceutical Association at San Francisco. There was evident interest and enthusiasm, notwithstanding the fact that most of those in attendance had come a great distance to see something of picturesque California as well as the wonderful Exposition, and participation in the work of the Association necessarily limited their time for such pleasure.

There was more or less difficulty in opening the sessions of the Sections on time, but this was largely due to a smaller general attendance than at the Detroit meeting. The accommodations at the latter convention were simply superb and such desirable provisions can be had only in comparatively few hotels; however, every assistance was given in San Francisco to facilitate the work of the Association. The daily papers gave little attention to the convention, ascribable to the many other events of more general interest to the public. The local committee did all in their power to make the visit of members enjoyable and the meeting successful; they were most generous in their hospitality. Every meeting has its lessons which may be applied in succeeding years and as co-operative spirit is a growing influence, we may refer to and deduct from the last three conventions.

The proceedings of no meeting of the American Pharmaceutical Association were ever better reported in the daily papers than at Nashville. The experience of this year suggests that especial attention be given this highly important matter in the future.

The Association was trained for greater efficiency in the conduct of the sessions at Detroit and the lesson should not be forgotten. That the Council did not conflict with the Section meetings in San Francisco is the outcome of last year's direction and the same idea should shape the program for next year.

A progressive thought of the San Francisco meeting was that which prompted the holding of the meetings of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties several days before the convention week of the American Pharmaceutical Association. This enabled these bodies to expedite their business and afterward work together. Never

before has there been such enthusiastic co-operation, some even realized for the first time that these two great organizations were really co-workers—had the very same objects in view. Surely such a step will always be looked upon as progress and the program for next year should be prepared along similar lines, if possible.

The history of every meeting of the American Pharmaceutical Association records some notable event; the 1915 San Francisco meeting will be remembered by the establishment of the Fairchild American Pharmacy Scholarship. It also goes to prove that the co-operative work of the Association with the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties is recognized, for they have been jointly made custodians of the scholarship. It may be interesting to note that the Fairchild Scholarship of Great Britain was this year awarded to Miss Doris Gregory now employed at Buchanan, Limited, London.

The sixty-fourth annual meeting of the American Pharmaceutical Association will be held at Atlantic City in September, 1916. It is not too early to begin to plan for making this meeting a most successful one. E. G. EBERLE.

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CO-OPERATION BETWEEN THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY AND THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES.

DURING the past year, and at the convention in San Francisco, The National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties have come to a better understanding of their respective functions.

Boards of Pharmacy base their judgment of the candidate's fitness to practice pharmacy largely upon the answers given by them to questions propounded by the examiners. Admittedly this is an imperfect test, but the numerous classified questions sent in to a special committee, appointed jointly by the organizations referred to, most forcefully indicates a very wide diversity of opinions relative to proper examination questions and impresses the necessity of co-operation between those who teach pharmacy and those who pass judgment upon their students. This is not a new discovery but corroborates a fact well known, and a condition which has evoked criticism from both, that to some extent has estranged the members of boards of pharmacy and teachers in pharmacy schools.

These bodies met together and discussed the subject with the evidence before them and recognized that after all both had the same object—that of qualifying pharmacists. The result is that these questions, and others to be presented, will be systematically arranged and grouped, so that when used as a guide, they will supply tests that, to say the least, come nearer in affording a correct determination of the fitness of the candidates than ever before possible.

The National Wholesale Druggists' Association, through Chairman W. A. Hover, asked the several bodies represented in convention at San Francisco to discuss the subjects of reducing the number of those engaged in the drug business without sufficient financial resources and discourage prescription departments in

stores where revenue was dependent upon the sale of merchandise and wherein the former was either inefficiently conducted or unprofitable.

There is no question but that the present system of licensure equalizes the standards of those who enter the drug business and still we realize the inequalities of those engaged. Are the standards fixed according to public opinion or the concensus of the opinion of pharmacists?

In the United States we insist on individual liberty and it is therefore with great difficulty that professional standards are advanced, so we must use the means at our command. The differences of opinion between the two organizations result from the viewpoints of the individuals, one class judging from conditions as they interpret them, the other as they would have them; both desire progress of pharmacy, hence there should be no great difficulty in the adjustment of opinions.

Public opinion cannot and must not be ignored: If the boards are, beyond question of legal complication, agencies for the fixing and enforcing of both professional and academic educational requirements for admission to the practice of pharmacy, then the direction of affairs is with them and they are largely responsible for the progress of pharmacy. Thereafter, the responsibility would be with the pharmacists in selecting members for boards of pharmacy to carry out proper policies.

We must have a thorough knowledge of the general conditions of the drug business, we must comprehend what we are desirous of doing, and know whether public opinion will sustain us, before effectual and progressive work for pharmacy can be accomplished.

In our estimation, the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties are destined to become potential factors in the future progress of Pharmacy in this country.

E. G. Eberle.

WILLIAM CHARLES ALPERS,

President of the American Pharmaceutical Association.

William Charles Alpers, Sc. D., President of the American Pharmaceutical Association, was born at Hanover, Germany, July 7, 1851. He attended the High School (Gymnasium) in Hanover, then the School of Technology, and later the University of Goettingen, where he studied in Natural Sciences and Mathematics. His studies were interrupted in 1870 by the Franco-German war, in which he participated. After the war, he came to America and was engaged in teaching for nearly ten years in the St. Matthew's Academy, New York. He entered the New York College of Pharmacy, and later took a post-graduate course in chemistry at the University of New York, receiving the degree of Sc. D. in Chemistry. In 1881 he opened a pharmacy in Bayonne, N. J., where he remained until 1898.

After leaving Bayonne, N. J., Dr. Alpers was for a number of years, manager of The Merck Pharmacy in New York and afterwards conducted The Alpers Pharmacy on Broadway and 31st Streets. This pharmacy, located in the center of the hotel district of New York, was considered the most elegant pharmacy of the city and soon attained a deserved reputation for efficiency, correctness and prompt service. Dr. Alpers withdrew from active business in 1905.

From the very first day of his pharmaceutical career, Dr. Alpers exhibited great interest in the development of pharmacy, and became active in the State as well as the National Association. He was elected President of the New Jersey State Pharmaceutical Society in 1896, and served as a member of the New Jersey State Board of Pharmacy from 1893 to 1898. In 1890 he became a member of the American Pharmaceutical Association and attended his first meeting in 1892 at the Profile House. Since that time he has seldom missed a meeting and has been very active in its deliberations. He has contributed a number of papers and is always found in the foremost ranks, contending for the betterment and advancement of the profession. He was chairman of the Scientific Section in 1896, of the Section on Pharmacy and Dispensing in 1906, and of the Historical Section in 1913. In 1903 he was elected First Vice-President and this year occupies the highest office of the Association.

He is a member of the Executive Committee of the Revision of the Pharmacopœia, and Chairman of the Sub-Committee on Syrups and Elixirs. He was a trustee of the New York College of Pharmacy for three terms until his removal to Cleveland to become Professor of Pharmacy and Dean of the Cleveland School of Pharmacy, in 1914; Dr. Alpers has contributed for many years to pharmaceutical and chemical literature and is now editor of the Apotheker-Zeitung, New York. He is the author of many pamphlets and of two books, "The Medicinal Plants of Staten Island," and "The Pharmacists at Work." (Lippincott, 1896).

Among Dr. Alpers' most notable contributions to pharmaceutical literature is his History of the American Pharmaceutical Association, the first decade of which was published in the Journal of 1912, and the second decade in the Journal of 1914.

Dr. Alpers has been married twice, first to Miss Bertha Guden, by whom he had six children. His oldest and youngest sons, William H. and Otto, received their pharmaceutical education in the New York College of Pharmacy. In 1913 Dr. Alpers espoused the present Madam Alpers, nee Miss Mathilda Van Damm.

In 1914 Dr. Alpers conducted the memorable excursion of American Pharmacists through Gremany, Austria and Switzerland, which was cut short by the European war, that prevented the party from visiting Paris, as was also intended. Dr. Alpers and his party were everywhere received with the greatest enthusiasm. The leading pharmacists of Europe who knew him through his writings, welcomed him everywhere and willingly opened to him and his friends the doors of all pharmaceutical institutions.

ABSTRACT FROM THE REPORT OF THE PROCEEDINGS OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY, HELD IN SAN FRANCISCO, CALIFORNIA, AUGUST 5 AND 6, 1915.

The twelfth annual convention of the National Association of Boards of Pharmacy was called to order at 11:25 on Thursday morning, August 5, at the Ramona Hotel, San Francisco, by the President, T. A. Miller, of Richmond. President Miller said that the usual addresses of welcome would be dispensed with, and requested the Secretary, H. C. Christensen, of Illinois, to call the roll.

After the roll call the Secretary announced that nineteen delegates were present representing thirteen different states out of the twenty-three states from which credentials had been received.

President Miller appointed the following members as a Committee on Credentials: Dr. George C. Diekman, New York; A. C. Wilson, Iowa, and Alfred Walker, West Virginia.

On motion of Mr. Wilson, of Iowa, the presentation of the annual address of the President and other officers was deferred to the afternoon session on account of the small attendance and the expectation that a larger number would arrive. After which the session was adjourned until 2 o'clock.

SECOND SESSION, THURSDAY AFTERNOON.

The second session of the Association was called to order by President Miller. Secretary Christensen called the roll, showing that the same delegates were present that had been present in the morning. The President requested J. C. Burton, of Oklahoma, Chairman of the Executive Committee, to take the chair, and then proceeded to read his address.

In this address the President briefly reviewed the history of the past year, telling of the work which had been performed by the Executive Committee and the officers of the Association. He referred with deep sorrow to the death of Fred A. Hubbard, of Massachusetts, President of the Association in the years 1907-8, and of Dr. Thomas F. Raymow, member of the Board of the State of New York. The President recommended that a memorial page be set aside in the minute book of the Association to record the death of each member who may have died during the year; that steps be taken to help relieve the pharmacists of Belgium in accordance with a request which had been transmitted through the Secretary; that high school education or its equivalent and graduation from a recognized school of Pharmacy be required of all candidates for registration in pharmacy after the year 1920; that the Commissioner of Internal Revenue be requested to require physicians, druggists and veterinary surgeons to keep copies of all prescriptions written by them in which narcotic drugs were ordered.

On motion of John Culley, of Utah, the address was referred to a committee for consideration of its recommendations. Chairman Burton appointed John Culley, Utah; J. W. Gayle, Kentucky, and Walter H. Cousins, Texas, as a Committee on the President's Address.

President Miller resumed the chair and called for the report of the Treasurer, which was submitted by the Secretary, Mr. Christensen, in the absence of the

Treasurer, F. W. Ward, Tennessee. This report was presented in summary and action deferred to a later session.

A. C. Wilson, Iowa, submitted a resolution providing an amendment to Article VII of the By-Laws, eliminating the word "active" from the present By-Laws, and substituting the word "five" for the word "three." The adoption of the resolution was moved by Mr. Wilson and seconded by Thomas D. Gregg, Illinois. The motion, after prolonged discussion, was put to vote and defeated.

President Miller then appointed the following members as a Nominating Committee, with instructions to present nominees for the several offices of the Association at the afternoon session on Friday: Thomas D. Gregg, Illinois; A. C. Wilson, Iowa, and W. H. Cousins, Texas.

J. C. Burton, Oklahoma, presented the report of the Executive Committee as chairman, covering the activities of the committee since the Detroit meeting. A meeting of the full committee had been held in Washington on March 16, 17, 18 and 19, 1915, at which all of the officers were present. The committee discussed plans for the program at the San Francisco meeting, selected a reporter to report the proceedings and adopted a resolution requiring applications for registering by reciprocity to be made on the official application blank of the Association. The committee discussed at length the statistics which had been kept by the various boards and their relation to the matter of reciprocal licensure. The committee recommended that the boards should not exclude from licensure applicants who had been unable to furnish detailed evidence or certification of grades made in examination. A form of proviso was adopted covering the cases of persons registered without examinations. The operation of the Harrison Anti-narcotic law was discussed at a conference with the authorities charged with its enforcement. A joint meeting with the Chairman of the Committee of the American Conference of Pharmaceutical Faculties was held, at which the program of the Detroit meeting was adopted. The work of the Advisory Committee was discussed with representatives from the faculties. The Secretary was instructed to obtain the fullest possible details regarding the examinations held by the different boards, with a view to putting a license by reciprocity on a more practicable scale. During the year 318 applications had been received and reciprocal registrations granted.

The report was referred to the following committee for consideration: H. L. Meredith, Maryland; W. F. Root, Vermont; Charles Gietner, Missouri.

J. W. Gayle, Kentucky, as Chairman, presented the report of the Committee on Legislation, which was signed by himself, Burton Cassiday, Indiana, and B. S. Persons, Georgia. The report directed attention to a number of recommendations contained in the report of the committee presented last year at Detroit. The committee recommended that a special committee be appointed to present these recommendations to the Section on Education and Legislation of the American Pharmaceutical Association, with the request that they be incorporated in the Model Pharmacy law. A number of additional recommendations were also made and these recommendations were referred to a committee composed of: R. A. Doyle, Missouri; Dr. George C. Diekman, New York, and Alfred Walker, West Virginia.

President Miller announced that the session was open for general discussion,

and said that it would be in order to take up the report of the Executive Committee if this was desired. On motion of Mr. Gietner, seconded by Dr. Diekman, the report of that committee was taken up seriatim. At the request of the President, Chairman Burton of the Executive Committee read the recommendations which were acted on as follows: The committee recommended the appointment of a committee of three to confer with the A. Ph. A., with a view to selecting central locations for places of meeting. This was adopted. That the official application blank of the N. A. B. P. be used by all applicants for reciprocal registration; this was adopted. That in those states where incomplete statistics had been kept, "the requirement of not less than 60 percent in any subject" might be waived where the secretary of the board certifies that the action is up to the N. A. B. P. standard. That the state board be allowed to grant reciprocal registration to applicants who had had fifteen years' experience subsequent to registration by reason of having been engaged in business at the time the state law was enacted, provided that he satisfies the board as to his qualifications by oral examination. That the official application blank be amended so as to provide that the applicant shall comply with such other rules and regulations as "this board may have established in regard to reciprocal registration." The suggestion that arrangements be made for the interchange of assistant's certificates was discussed by Messrs. Gayle, Root, Diekman, Walker, and was finally rejected.

There being no further business before the session, adjournment was had at 5 p. m.

THIRD SESSION, FRIDAY MORNING.

At the opening of the Third Session on Friday morning, Secretary Christensen read a telegram from R. H. Walker, Gonzales, Texas, explaining, apologizing for and regretting his absence, and was instructed to make suitable reply.

John Culley, Utah, as Chairman of the Committee on the President's Address, recommended the adoption by the Association of the following recommendations of the President: That a memorial page be set aside to record the death of members of the Association. That a high school education or its equivalent and the graduation from a recognized school of Pharmacy be made a prerequisite for candidates for registration after 1920; that the Commissioner of Internal Revenue be requested to require physicians, dentists and veterinarians to keep copies of all prescriptions calling for narcotic drugs. The request for aid for the pharmacists of Belgium was referred to individual members for individual action as the associations had no funds available for such purpose. The prerequisite requirement recommendation precipitated an animated discussion participated in by Messrs. Walker, Gietner, Wilson, Haymaker, Meredith, Root, Christensen, Cousins and Miller. The recommendation of the committee as a whole was adopted.

The report of the Committee on Legislation was taken up for discussion and the following recommendations were adopted: (1) That a committee of three be instructed to bring before the Section on Education and Legislation of the American Pharmaceutical Association the nine recommendations adopted at the Detroit meeting, with a request that they be incorporated in the Model Pharmacy Law. (2) That uniform label requirement be adopted by all Boards. (3) That

uniform requirements be adopted with respect to display of certificates of registration. (4) That all state laws be made uniform and to conform with the United States laws concerning narcotic drugs. (5) That the term "patent or proprietary preparation or remedy be defined as one, the name of which does not appear in the United States Pharmacopœia or National Formulary or the complete formula of which is not printed on the label attached to the container."

On motion of Dr. Diekman the recommendations regarding legislation were referred to the Section on Education and Legislation of the American Pharmaceutical Association.

President Miller called for a report from the individual members regarding the working of the Harrison anti-narcotic law in the different states. W. H. Cousins reported that save for a temporary congestion of the municipal hospitals at first the law had been a success in Texas. Dr. Diekman reported a satisfactory effect of the law in New York State. J. W. Gayle said that the law operated satisfactorily in Kentucky except that the state did not define a veterinarian and, as a consequence, unqualified men, claiming to be veterinarians, had abused the privilege extended to this class. A. C. Wilson said that the pharmacists were pleased with the operation of the law in Iowa. John Culley said that Utah pharmacists looked upon the Harrison law as one of the most salutary and beneficent pieces of legislation enacted in recent years. E. F. Boden said that the pharmacists of Michigan were much pleased with the Harrison law and had secured an amendment of the state law to make it conform exactly with the National Act. J. C. Burton said that the law works nicely in Oklahoma. J. W. Gayle, of Kentucky, and President Miller both spoke of the failure to prescribe any restrictions in the issuance of prescription blanks and order blanks.

Secretary H. C. Christensen called the attention of the Association to a request for aid of Belgian pharmacists. While the members sympathized deeply with the object sought, it was ruled that the funds of the Association could not be diverted to such eleemosynary purposes, but the individual members were invited to forward subscriptions.

The following former members of Boards of Pharmacy were elected to honorary membership: Walter C. Price, West Virginia; D. F. Davis, Vermont; John J. Campbell, Michigan; Will E. Collins, Michigan; J. B. Mitchells, Illinois; Charles A. Fraser and J. D. Humphrey, Oklahoma; M. C. Metzger, Illinois; C. E. Zinn, Missouri; John R. Wall, New York; C. S. Porter, Kentucky; John R. Crittendon and Tom J. Snell, Texas; William S. Flint, Massachusetts

The meeting then adjourned to 2 o'clock.

FOURTH SESSION, FRIDAY AFTERNOON.

At the opening of the Fourth Session on Friday afternoon, Secretary Christensen read the report of the Advisory Committee, which was adopted as read. Secretary Christensen explained some of the special phases of the recommendations of the committee which were discussed by Messrs. Gayle, Walker, Meredith, Root, Diekman.

Mr. Culley directed particular attention to the importance of the joint meeting to be held on Saturday morning with the Conference of Faculties, and urged the

attendance of all the members. A resolution was adopted providing for the appointment of a committee to raise funds to pay the expenses involved in a continuation of the work of the Advisory Committee. This committee of three will be known as a Committee on Ways and Means and will be appointed by the incoming President.

Thomas D. Gregg, of Illinois, read the report of the Committee on "More Satisfactory Examination of Candidates for Graduation and for Board Certificates," by W. S. Flint, Chairman, of Massachusetts. On motion of Mr. Gietner this report was adopted.

The Boards of the District of Columbia and the State of Oregon were elected to membership.

H. C. Christensen presented his report as Secretary, in abstract, which was accepted and referred to the Executive Committee.

The Secretary read several letters from various Boards, which were filed as a matter of record.

W. H. Cousins read the report of the Nominating Committee recommending the election of the following officers: President J. C. Burton, Oklahoma; First Vice-President, J. W. Gayle, Kentucky; Second Vice-President, W. F. Root, Vermont; Third Vice-President, John A. Weeks; and Secretary and Chairman of the Advisory Committee, H. C. Christensen, Illinois; Member of Executive Committee, A. C. Wilson, Iowa; Member of the Advisory Committee, Charles Gietner, Missouri; Treasurer, F. W. Ward, Tennessee; Syllabus Committee, E. E. Faulkner, Michigan. The entire list were elected in accordance with the report of the committee.

The installation of officers then took place and the session was adjourned.

In succeeding issues of the Journal some of the reports of officers and committees will be printed.

AN ABSTRACT OF THE MEETING OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES HELD IN SAN FRANCISCO, CALIF., AUGUST 6.

At the Sixteenth Annual Meeting of the American Conference of Pharmaceutical Faculties, held in the City of San Francisco on August 6, 1915, action of special interest to the Colleges and Faculties was taken as follows:

Several recommendations contained in a report made by Dr. H. H. Rusby, of New York, as chairman of a special committee created at Detroit last year to investigate and report upon the question of teachers' salaries, were made, viz.:

1. That it is neither practical nor desirable to advise that the Conference make any schedule of salaries, either minimum or maximum, at the present time.

2. That the Dean should receive a salary for that office aside from and in addition to what he may receive for his teaching position.

3. (a) That the salary of an Associate Professor shall be two-thirds that of a Professor.

(b) That the salary of an Assistant Professor shall be four-fifths that of an Associate Professor.

(c) That the salary of an Instructor shall be three-fourths that of an Assistant Professor.

(d) That the salary of an Assistant shall be half that of an Instructor.

(e) That each of these salaries be fixed on an advancing scale, from a minimum to a maximum, and that the minimum for one grade be equal to the maximum of the grade next lower, three years being required for the maximum to be attained; and that the salary should pertain to the position, and not the man.

The last clause (e) of the third recommendation was amended to the effect that an increase of salary shall go with every promotion in rank, without having to wait for a year for such increase.

The recommendations as thus amended were then adopted as the recommendations of the Conference.

The question submitted to a special committee last year as to whether the regular two-years' college-of-pharmacy course should be extended to three years in 1920 was reported upon adversely as not warranted by present conditions in a report submitted by Chairman H. M. Whelpley, of St. Louis.

The Conference adopted a motion to refer to the Secretary and Executive Committee, with power to act after conference with the Publication Committee of the A. Ph. A., a proposition made to consider the publication of the proceedings of the Conference in the Journal of the American Pharmaceutical Association.

The address of the President embodied a great many valuable suggestions and recommendations, and the unusual course of referring same to two committees instead of one,—a committee upon the outward relations of the Conference, as set forth in the first division of the address, and a committee upon its inner relations, considered in the second division,—was adopted, with the result that the Conference adopted the following recommendations coming from the two committees, the first two only being proposed by the first-division committee:

1. That a Standing Committee on Higher Educational Standards be appointed by the President of the Conference, to work jointly with similar committees of the A. Ph. A., N. A. B. P., N. A. R. D., and State Associations, such committees to work with their parent associations as well as jointly.

2. That a Special Committee on the Federation of all Pharmaceutical Organizations be appointed.

3. That a committee of three shall be appointed to consider the propriety of establishing a secondary class of membership in this Conference, said committee to report at the next annual meeting.

4. That the traveling expenses of the Chairman of the Executive Committee, including the expense of attending the annual meeting of the Conference, be paid, and that he be considered the officer to fulfill the duties suggested by the President in his address.

5. That the attention of the Secretary of the Conference be called to the suggestion of the President that the time has come for greater publicity of the work of the Conference, through the papers where the meetings are held and through the pharmaceutical press.

6. That the Rules and Regulations of the Conference be revised to date each year, and published in the Annual Proceedings.

7. That a special committee be appointed to consider and report next year upon the suggestion made by the President that this organization become an Association of Colleges and Faculties of Pharmacy.

8. That the suggestion of the President is approved, that the members of this Conference be apprised of the possibility or probability of a Carnegie investigation in the near future, and that it is desirable that the Secretary of the Conference call the attention of the schools to this prospect.

9. That, without discussion or hesitation, the Committee on President's Address unanimously recommends the Sabbatical year.

10. That the committee approves the recommendation of the President that the statistics on secondary education now in the hands of the Chairman of the Executive Committee be tabulated and presented at the next annual meeting.

11. That the committee approves the recommendation that the Executive Committee investigate the conditions of the Carnegie retirement allowances, and ascertain if the members of this Conference can be included.

12. That the committee approves the recommendation regarding the appointment and promotion of faculty members.

13. That the committee approves the recommendation regarding the exchange of professors among the schools.

14. That a committee of three be appointed on the classification of Teaching Staffs.

15. That a committee of three be appointed on the question of matriculation blanks, advanced standings for students, and other similar subjects discussed by the President.

16. That a committee of three be appointed on the Relations and Duties of Alumni.

17. That a committee of three be appointed on Relations with other than Pharmaceutical Schools.

18. That a committee of three be appointed on Conference with Boards of Pharmacy.

19. That a committee of three on College Bulletins be appointed.

The following recommendations made by the Chairman of the Executive Committee in his report were adopted:

1. That the Executive Committee be instructed to arrange in future for the annual meetings of the Conference immediately preceding the meeting of the American Pharmaceutical Association.

2. That the Conference recommends that the minimum requirement for the degree of Doctor of Pharmacy shall be at least a four years' College-of-Pharmacy course, following sixty counts of secondary education.

A resolution was adopted requesting the National Association of Boards of Pharmacy to rescind its action heretofore taken not to meet annually in advance of the A. Ph. A. meeting and agree to meet immediately prior to that time, so that the Conference and Boards may have their annual meetings at the same time.

A motion was adopted that the Secretary, in sending out to the schools prompt notice of the action taken by the Conference in annual meeting upon matters affecting their interest, in accordance with the resolution adopted last year, be directed to request the schools to notify him of any action taken by them upon the various subjects recommended by the Conference.

A hearty rising vote of thanks was extended retiring President Wulling for his very able and comprehensive address, and for the ability and fairness with which he had conducted his office.

A SYNOPSIS OF PRESIDENT WULLING'S ADDRESS.

PART I—THE CONFERENCE AND ITS OUTWARD RELATIONS.

1. A diagnosis.
2. The Conference and the N. A. B. P. and the State Boards.
3. The Conference and the Colleges.
4. The Conference and the State Associations.
5. The Conference and other Associations.

PART II—THE CONFERENCE AND ITS INNER RELATIONS.

I. *The Conference Itself.*

1. Administration Affairs.
 a. Increasing the membership.
 b. An additional class of membership.
 c. Greater Conference activity.
 d. Increase of annual dues.
 e. Employment of the Conference income.
 f. Salaried officers.
 g. Greater publicity.
 h. Manual of Conference rules and actions.
 i. Nomination of officers.
2. The Conference and the Colleges.
 a. A conference or an association?
 b. Carnegie Foundation investigation.
 c. Sabbatical years.
 d. Tabulated information on secondary education.

II. *The Colleges.*

1. The Colleges and Their Administrative Affairs.
 a. The college governing bodies.
 b. The budget.
 c. The teaching body.
 d. Appointments, promotions, salaries.
 e. Exchange professors.
 f. Special lecturers.
2. About the Faculties.
 a. Classification of teaching staff.
 b. Qualifications of teachers.
 c. Ratio of teachers to students.
 d. Faculty regulations of student activities.
 e. Research.
 f. Fellowships.
3. About the Students.
 a. Uniform methods of registration.
 b. Uniform systems of grading.
 c. Uniform rules governing advanced standing.
 d. Proper student activities.
 e. Ethical standards, housing and health conditions.
 f. Student councils.
 g. Honor system.
 h. Scholarships.
 i. Loan funds for worthy students.
4. About the Curriculum.
 a. Relative and equitable percentage value of courses comprising the curriculum.
 b. Credits value of subcourses.
 c. Business and law subcourses.
 d. Book research, journal work, courses of reading and cultivation of medicinal plants as parts of regular curriculum.
 e. Subcourse prerequisites.
5. About the Alumni.
 a. Maintenance of alumni interest.
 b. What alumni should do for the college.
 c. Alumni on the Boards.
6. About Relations with Colleges other than Pharmacy.
 a. Pharmaceutical credits towards advanced standing in medical and dental colleges.
 b. High schools as feeders for the colleges.
7. About Relations with the Boards.
 a. Boards and entrance standards.
 b. Co-operation between Faculties and Boards in examination of candidates.
 c. Outline of examinations
8. About College Bulletins.
 a. Model bulletin.
 b. Uniform credit units.
 c. Courses stated in credit units.
 d. Statement of membership in Conference bulletins.

It is contemplated to print reports and papers presented at the Conference in succeeding issues of the Journal.

Contributed and Selected

ACTINOMYCES MYRICARUM (YOUNGKEN), THE CAUSE OF MYRICA AND COMPTONIA TUBERCLES.*

HEBER W. YOUNGKEN, PH. G., A. M., PH. D.

Within the past thirty years various investigations have been carried on by Brunchorst, Moller, Shibata, Chevalier, Harshberger, and Arzberger in respect to an endophytic organism living in the tissues of the Myricas and forming tubercles.

Brunchorst[13] was the first to mention the tubercles on Myrica Gale and named the fungus producing them—Frankia Subtilies—because he considered this organism similar to that in the tubercles of Alnus.

Moller[14] later found the organism to differ considerably from that infesting Alnus, and named it—Frankia Brunchorstii.

Shibata[15] investigated the tubercles found on Myrica rubra, his observations being on both fresh and preserved material. He described the morphology of the tubercle, showing that the fungus confines itself to a ring of from one to three layers of cells beneath the cork, thus differing from the condition found in Alnus. He also pointed out that infection takes place acropetally by means of fungal threads. He traced these threads into the already differentiated meristomatic cells where they grew rapidly to form a dense thready reticulum, then branched into radiate threads whose free ends became swollen in clavate fashion. He assigned to the fungus a position in the genus Actinomyces.

Chevalier[7] (p. 124-139) examined the tubercles on the roots of Myrica Gale (Gale pabustris), Myrica cerifera, Myrica Caroliniensis (M. Pennsylvanica), and Myrica sapida var. longifolia. He found them on main roots, adventitious roots of subterranean branches, and on subterranean stems. He described at length their general gross structure and histology, the occurrence of gummy lignin in the cells attacked, and called the infesting organism, Frankia Brunchorstii, previously observed by Moller.

Harshberger[16] observed the tubercles on the adventitious roots of Myrica cerifera. He studied the structure of the mature tubercles from dry material only which had been boiled in water and afterwards treated with alcohol. He called the tubercles mycodomatia and claimed for the infesting fungus a position closely related to the Comycetes.

Arzberger[17] investigated the root tubercles of Myrica cerifera, Myrica Gale, and Comptonia asplenifolia (Myrica asplenifolia) and stated, like Harshberger,

* Abstract from The Comparative Morphology, Taxonomy, and Distribution of the Myricaceae of the Eastern United States, a thesis presented to the faculty of the Graduate School, U. of P., May, 1915, by the author in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

that these structures appear on adventitious roots which grow out from the lower part of the stem or from branches or stems which have been covered over with leaf mold or soil for several years. He described the morphology and cytology of the tubercles, but his illustrations do not show the true nature of the radiating clavate branches. He favored the opinion of Shibata in placing the fungus in the genus Actinomyces.

During the last three years the writer has collected and examined abundant tubercle material of M. cerifera, M. Caroliniensis, M. Macfarlanei (M. cerifera and M. Caroliniensis) Youngken, and Comptonia asplenifolia at Palermo and Tuckahoe, N. J.; of M. Caroliniensis and Comptonia asplenifolia at Clementon and Albion, N. J.; of Comptonia asplenifolia near Mainville, Pa.; and of M. cerifera, M. Caroliniensis, and M. Macfarlanei at Wildwood and Rio Grande, N. J. He has raised M. cerifera seedlings bearing tubercles from seeds which he planted in sandy soil in the University of Pennsylvania greenhouse. He has furthermore examined tubercle material of M. Gale collected by Dr. John M. Macfarlane along Trefethan Bay in Chebeague Island, of Casco Bay, and on the south eastern part of Peak's Island in Casco Bay, Maine.

METHODS.

Material from many plants of each species was macroscopically and microscopically examined both in its fresh and preserved condition. All of the preserved material was fixed in weak, medium, and strong Flemming's on the ground immediately after the position and nature of the tubercles on the plants had been ascertained. Samples of each lot were then dehydrated in gradually increasing strengths of alcohol, cleared in cedar oil and xylol and imbedded in paraffine. Transverse, tangential, longitudinal radial, and longitudinal tangential sections were then cut 6-10 microns thick and subsequently stained in several ways. The best results were obtained with the Methylene Blue and Acid Fuchsin combination, although satisfactory results were also obtained with a combination of Safranin and Gentian Violet.

The writer employed the following technique in isolating the endophyte which produces the tubercles on M. cerifera, M. Caroliniensis, M. Macfarlanei, M. Gale, Comptonia asplenifolia and probably most, if not all, of these lesions on other plants of the Myricaceæ.

A tubercle cluster from a root of one of the seedlings grown in the University of Pennsylvania Greenhouse was washed thoroughly with clean water to remove all traces of adhering soil. It was then introduced into a test tube containing 1 : 1000 corrosive sublimate solution for twenty seconds in order to destroy any surface organisms. From this it was transferred with sterile forceps to a test tube containing distilled water which had previously been sterilized in the autoclave. Into this was introduced a sterile scalpel and two of the tubercles were cut into small fragments. These fragments were next transferred to five tubes of sterile slant agar by means of a sterile platinum loop. The tubes containing the culture were then stored in a dark closet at ordinary room temperature for several weeks. All five cultures when examined revealed the presence of Actinomyces rosettes, non-septate thin filaments, and rods of different sizes as well as coccus forms, all of which stained well by Gram's method. The coccus forms are prob-

ably for the most part products of the degeneration of the filament. Jordan supports this view in regard to similar forms of Actinomyces found in cattle, sheep, hogs, and man. The Actinomyces rosettes were found to be present in the depth of the agar. This shows the anærobic nature of the organism. From two of the above cultures, the writer has recently successfully grown pure sub-cultures on coagulated horse serum in sealed tubes, kept at the temperature of 37.5° C.

Five seedlings of M. cerifera, which the writer had previously grown from seed in the University of Pennsylvania Greenhouse, were then removed from the soil and their root systems loosened from adhering sand by gently washing in clean water. With the aid of Mr. Lambert, of the University Gardens, who, like the writer, took special care to insure against sources of infection by other organisms, the root systems were one by one quickly dipped into 1 : 1000 corrosive sublimate solution and then washed in sterile distilled water. While Mr. Lambert, with sterile hands, held each seedling so treated, the writer, by means of a long needle previously sterilized by passing through the Bunsen flame, removed a small portion of the Actinomyces culture from one of the tubes and pricked it into the root of four seedlings, marking the place of inoculation by tying a sterilized piece of cord just above the puncture. The last seedling was treated similarly to the first four, with the exception that it was merely pricked with a sterile needle. This served as a control. Each seedling was then planted in a sterile pot containing sterile sand. Both pot and sand were previously sterilized in the hot air oven at a temperature of 210° C. for eight hours. The potted seedlings were then placed in a special case in the Greenhouse and daily watered with sterile Knop's solution. At the expiration of nine weeks, the seedlings were carefully removed, washed in clean water and their roots examined for the presence of tubercles. These were found in a primitive state at the points of inoculation on all but two, including the control, which was pricked with a sterile needle only. (This merely developed the usual healthy suberous scar tissue.) Thin hand sections of one of the tubercles revealed the presence of Actinomyces in the same condition as observed in the cells of the tubercles of the M. cerifera seedling, as well as of the tubercles on the other species above noted. The appearance of the infesting Actinomyces within the cells of the host plants will be treated under the caption dealing with the histology of the tubercles.

GROSS STRUCTURE OF TUBERCLES.

The writer has found tubercles on the M. cerifera, M. Caroliniensis, and M. Macfarlanei seedling primary roots of five to six months' growth, and from thence onward on the secondary roots inserted on the hypocotyl axis, on nearly all the adventitious roots of subterranean branches and on the subterranean branches of M. cerifera, M. Caroliniensis, M. Gale, M. Macfarlanei, and Comptonia asplenifolia.

The tubercles occur either singly, as is frequently the case on subterranean branches, in small groups the size of a pea, or in larger coralloid loose or compact clusters which frequently attain the size of a large black walnut. Each tubercle is a short cylindrical blunt ended root-like structure which branches di or trichotomously after attaining a certain length. The branches frequently rebranch at their tips which grow out into long thread-like structures from 1-3 cm. in length,

which may also branch and become entwined about the roots of other plants. The maximum length of a tubercle is five mm. The average length of the branches is from 2-3 mm. The color of the youngest tubercles is a pinkish gray brown. As the tubercles become older their color changes to brown, dark brown, and even black.

HISTOLOGY.

The tubercles when studied microscopically exhibit the following structural detail:

A cork constituted of from 2 to 4 layers of suberous cells, whose outer ones are dead, filled with gummy lignin, and in the process of exfoliation, forms the external bounding layer. The cork tissue is derived from the outer layer of pericambium of the host root which functions as a phellogen during the development of the tubercle. Beneath the cork lies a very broad cortex which, instead of being formed as in normal roots of 5-12 layers of cells separated by large intercellular air spaces, is constituted of from 15-24 layers of very closely united parenchyma cells. The outer 3-5 layers of this region are composed of rounded to tangentially elongated cells, some of which contain starch grains, others tannin, a few gummy lignin. Underneath this lies a zone usually 2 to 3 cells broad of radially elongated cells and a few smaller rounded cells which are separated by small air spaces. The radially elongated cells are hypertrophied and contain the Actinomyces parasite, which may or may not be enveloped by gummy lignin. Many of the abutting smaller cells are rich in tannin and show no evidence of the parasite. Beneath this zone of infested cells is found usually a broader zone of smaller isodiametric cells intermingled with a few oblong cells. In M. Caroliniensis as noted by Chevalier, in M. Macfarlanei, M. Gale and Comptonia asplenifolia as noted by the writer, it frequently happens that other cells scattered without order throughout the cortex are also infested by Actinomyces. These, like those of the infested radially elongated zone, are also hypertrophied. All of the infested cells are united by means of Actinomyces threads which run through the cell walls from cell to cell as well as the intercellular air spaces. The endodermis or innermost layer of the cortex is composed of small oval thick-walled cells which contain a yellowish brown substance (gummy lignin). The walls of these cells become suberized very early. Underneath the endodermis is found the vascular cylinder, which is quite reduced in size as compared with that of the normal root. In the young tubercle it is constituted of a radial tetrarch fibrovascular bundle which surrounds a small pith. The phloem elements of the bundle become inactive very early. The xylem is composed mostly of wood fibres intermingled with a few tracheæ. Secondary development is of very short duration.

In the younger tubercles the vascular cylinder extends only part way into the apex, while in older ones the cylinder with some cortical parenchyma cells surrounding it grows out into a slender thread from which lateral branches are then cut off.

Actinomyces living in the tubercles is best observed in its various relations, in a radial longitudinal section. There the youngest stages may be observed in the meristematic region of the apex, while the older stages may be traced back toward

the base of the tubercle. As observed by Shibata in M. rubra tubercles, the writer has likewise noted in the case of the tubercles of M. cerifera, M. Caroliniensis, M. Macfarlanei, M. Gale, and Comptonia asplenifolia that the differentiation of the ring of infested cells starts in the meristem near the growing apex, thus indicating that infection takes place acropetally. Since tubercles are found on the seedling roots of 5-6 months' growth, it would indicate that infection takes place very early in the life of the young seedlings.

These infested meristematic cells become radially elongated and are found to contain several extremely fine non-septate and branched thread-like structures. The Actinomyces (Streptothrix) threads extend through the transverse and longitudinal walls of these cells, aided evidently by the secretion of a ferment which dissolves the cell wall in the line of the organism's progress. They then invade neighboring cells where they run between the starch grains toward the nucleus around which the organism seems to derive its greatest benefit. Shortly after the appearance of parasite threads within the invaded cells, the starch grains become dissolved, and in this form are appropriated as food by the organism. The nucleus becomes hypertrophied and finally perishes. The endophyte by this time has grown very rapidly into a dense thready reticulum. Gummy lignin appears at first of a clear yellow color, but later becoming yellowish brown. The dense thready web of the organism sends out clusters of radial thread branches forming an Actinomyces rosette, which in many cells completely fills up the whole cell lumen. These threads frequently become club-shaped at their extremities. Some of the threads after piercing through the wall of a cell develop clavate ends. In due course of time, as is evidenced in many older infested cells, the fungal threads become shrunken together and impregnated with gummy lignin, forming a good-sized lump of degenerating material within the cell, which remains connected with similar lumps, or mycelial webs of adjacent cells by means of threads which penetrate the cell wall. Some of the cells containing the rosettes also show coccus-like forms, while other cells, especially in the older basal portion of the tubercle, are almost completely filled with these. These cocci are probably products of the disintegration of the filament. They may be involution forms of the Actinomyces organism which appear in cells whose contents are poorly adapted to the trophic needs of the endophyte. Their presence in such large number on artificial culture media would support this hypothesis. While Actinomyces is the primary infecting agent responsible for the tubercles on Comptonia asplenifolia, there frequently later appears in the cells and intercellular air spaces of some of the tubercles a mycelium producing fungus with unseptate hyphæ belonging probably to the Comycetes, as Harshberger suggested. The hyphæ of this fungus are several times as thick as those of Actinomyces. They penetrate through the cell walls of the tubercle, passing from cell to cell, and often coil up into a mycelial mass in many of the cells invaded.

Since Actinomyces is frequently a virulent pathogenic organism in cattle, and other domestic animals up to man, because the swellings it produces on plants are analagous to those on animals, since the forms of the organism as shown by Jordan[18] in the infested lesions of animals are similar to those which the writer has described in the lesions of Myrica, and since the cultural characteristics of

the organism isolated from the lesions of animals by Wright,[19] Wolff and Israel[20] are in many respects similar to those isolated from the Myricas and described by the writer, he would regard the organism as a parasite and suggest its possible pathogenic relation to such animals.

The Actinomyces not only confines itself to the cortex of the tubercular roots, it later works its way into the tracheæ of these structures, passes into the pitted vessels of the main roots, thence into those of the stems, and, conveyed by the transpiration stream gradually upward, is carried through the axes of catkins so as finally to reach the flowers, bracts, and fruits. In these it confines its existence to the parts corresponding to the mediocortex of the root tubercles, namely, the mesophyll and outer mesocarp regions respectively.

The writer having isolated the organism in pure culture from the lesion produced by it on the seedling tubercles, hereby assigns to it the name Actinomyces Myricarum.

Actinomyces Myricarum has been observed by the writer in its most luxuriant form in the cells of the middle fruit wall of the various species studied. Here it can be recognized best in thin hand sections stained with safranin and methyl-green in the form of rosettes almost filling the cell lumina. When the fruits fall to the ground and subsequently break open their walls, the organism probably makes its way from the infected cells into the soil where it spreads through wide areas infecting the roots and stems of other Myricas and producing characteristic lesions.

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13. Brunchorst: Die Structure d. Inhaltskörper in d. Zellen einiger Wurzelanschwellungen, Bergens Museums, Arber, p. 233, and plate 21.
14. Moller: Beitrag zur Kenntnis der Frankia subtilis Brunchorst, Berichte der deutschen Bot. Gesellschaft, p. 215-224 (1890).
15. Shibata: Die Wurzelanschwellungen von Alnus und Myrica in Cytologische Studien über die endotrophen Mykorrhizen, Jahrbücher, für wissenschaftliche Botanik, Bd. 37, p. 668-670.
16. Harshberger: The form and structure of the mycodomatia of M. cerifera, Proc. Acad. Nat. Sci of Phila., 55: 352-361.
17. Arzberger: The fungus root tubercles of Ceanothus Americana, Elaeagnus Argentea and Myrica cerifera, Missouri Botanical Garden Report, p. 82 (1910).
18. Jordan: General Bacteriology, p. 404-413 (1908).
19. Wright: Pub. Mass General Hosp., Boston, 1905; Journal Med. Res., 8, p. 349 (1905).
20. Wolff and Isreal: Arch. f. path. Anat., 126, p. 11. (1891).

THE AVERAGE COST OF PRESCRIPTIONS.

The following schedule was prepared by F. W. Nitardy and is compiled from answers to *Question* 15, of the Colorado Pharmaceutical Association, presenting the following interrogatories: "Have you ever taken the time to calculate the average cost of prescriptions and the average price received? Can you furnish us with figures, giving:

A—Cost of materials used in filling 1,000 consecutive prescriptions?

B—Estimate of the number of hours of time required to fill them?

C—Cost of containers, labels, corks and other incidentals necessary?

D—Estimate of overhead expense (excluding clerk hire), such as light, rent, heat, telephone, insurance, interest on investment, taxes, waste, etc., on your prescription department for a period covering the number of days in which you will fill 1,000 prescriptions?

E—The price received for the same 1,000 prescriptions?

The answers scheduled are:

1000 Prescriptions	A	B	C	D	E
Est. of hours required for compounding	200	250		164	212½
Cost of materials	$144.14	$165.01	$134.50	$140.00	$210.00
Cost of time (estimate)	60.00	100.00	43.00	82.00†	85.00†
Cost of containers	25.00*	23.36	36.00	29.75	25.00*
Overhead expense (estimate)	49.35	66.43	36.50	122.96	148.25
Total cost	278.49	354.80	250.00	374.71	468.25
Price received	493.55	511.00	445.50	500.00	525.00
Cost	278.49	354.80	250.00	374.71	468.25
Gross profit	215.06	156.20	195.50	125.29	56.75
Percent gross profit on selling price	43.5	30.56	42.8	25.	10.8

1000 Prescriptions	F	G	H	I	J	Average
Est. of hours required for comp.	184	208	250	225	245	215½
Cost of materials	$217.20	$217.60	$188.37	$198.87	$215.00	$183.07
Cost of time (estimate)	73.60†	83.20†	100.00†	90.00†	98.00	81.48
Cost of containers	25.00*	25.00*	23.36	25.00*	30.00	26.75
Overhead expense (estimate)	75.00	35.51	66.43	75.00	80.00	75.54
Total cost	390.80	361.31	378.16	388.87	423.00	366.84
Price received	553.00	507.00	511.00	500.00	500.00	504.60
Cost	390.80	361.31	378.16	388.87	423.00	366.84
Gross profit	162.20	145.69	133.84	111.13	77.00	137.76
Percent gross profit on selling price	29.33	28.73	26.19	22.22	15.4	27.3

He follows these statements by an analysis of the reports and asks pharmacists to think, investigate and act in order to place professional pharmaceutical service on a higher plane.

WHAT DO THE ABOVE FIGURES SHOW?

Briefly, that the average cost of a prescription is 36⅔ cents, bringing an average retail price of 50½ cents, or an average gross profit of 13¾ cents, or 27⅓ cents on every dollar taken in on prescriptions.

What is taken out of the gross profit before it becomes net profit?

If you will look at the cost items you will see that the cost shown in the above figures only brings the prescription to the point of furnishing you a finished and salable piece of merchandise, making it equal to any other merchandise you have for sale. The only point in which it has the advantage over other merchandise is its immediate turnover.

To make myself a little more clear let us assume that you are subletting your Prescription Department to a second party who furnishes everything included in the above cost, but wants your service as manager and your clerk's time to wait on the customer, that is, take in the prescription and hand out the finished prod-

† No cost estimate was furnished in these papers. The cost was based at 40c an hour, which is equivalent to $100.00 per month salary on a 60 hours per week schedule, making no allowance for waste of time, care of stock, etc.

* No cost of containers were given in these papers. The sum of $25.00 was inserted by Mr. Nitardy as a conservative estimate.

ucts. You take in the money, and assume all the responsibility, including that of accounts and collections. What would it cost you to give this service? I doubt that it could be handled on less than 25%, it might take 30. But whatever your estimate is, subtract it from 27⅓%, the average gross profit on prescriptions, and you have *your net profit.*

Is the result satisfactory?

Why should pharmacists place such a low value on their service? Or must we look elsewhere for the reason for this condition?

The concensus of opinion at the Convention in Boulder was that druggists as a rule do not know what part, if any, of the money taken in on prescriptions is profit, for considerable time is required to obtain figures like those shown above. No doubt that is the real reason.

You are entitled to a profit on the merchandise sold through the prescriptions as well as to a small fee for your professional service, knowledge and responsibility, and I believe it is worth your while to investigate whether or not you are getting what you should and what the public expects you to get.

The Pharmacist is a public servant carrying grave responsibilities, and public safety demands that he be compensated for his service.

Think—Investigate—and then *ACT.*

SOLUTIONS.*

J. ROEMER.

In a consideration of the subject relating to solutions, whether applying to such as are used in pharmacy for medication or to such as are used in the applied sciences as well as natural solutions, due observance should be directed to the fundamental factors which govern results obtained or sought.

The meaning of the word "Solution" as applied in pharmacy is restricted and in this relation the Pharmacopœia further restricts its application by designating such aqueous preparations only without sugar in which the substances acted upon are wholly soluble in water and in this by again further excluding volatile and gaseous substances.

This cannot be considered broad enough in scope of meaning to obtain a clear idea when we use the word solution, for as such it is applied in meaning to far greater extent and comprehensive intent.

In its widest latitude we understand a solution to be homogeneous mixture of two or more substances and from this definition can encompass the conditions of

* This contribution was intended for the Section on Practical Pharmacy and Dispensing, but reached Chairman Osseward after he had returned from the convention. We print this paper not only for its value, but to honor a man who served the Association and was a strong support of the Journal. Mr. Roemer was President of the New York Branch of the American Pharmaceutical Association. Notice of his demise will be found in this issue.

the three states of matter; gaseous, liquid and solid, which give rise to nine phases as solutions.

A diagrammatic arrangement of them would be as follows:

	Gas,		Gas,		Gas,
Gas,	Liquid,	Liquid,	Liquid,	Solid,	Liquid,
	Solid,		Solid,		Solid,

in which any homogeneous mixture as a gas with a gas, a liquid with a solid, a solid with a gas, etc., would be a true solution.

There is, however, another class which in speaking of solutions we must not overlook. These are not in the accepted use of the word true solutions, yet are so designated.

These are the colloidal solutions which to ordinary appearances exhibit the conditions of true solution but in reality differ from such in being heterogeneous and differ from them in a number of physical properties determined by lowering of freezing point, lowering of vapor tension of the solvent, and osmotic pressures.

From recent advances made in the study of the colloidal phases of matter, promise is fair to assume that this will occupy a most important place in pharmacy, and the more so when we realize that about 65% to 75% of the preparations of pharmacy are colloidal in their nature.

The present status of conditions in pharmacy is such that little attention is given to means employed for differentiation and to most of us when solution is mentioned our ideas are limited to mixtures of gas in liquids and solids in liquids in terms of substances and solvent.

In so far as this applies to solutions it must necessarily as well apply to the pharmacy in general of solutions: in which the essential result sought is to furnish such in manner and means admissible for medication.

As first consideration we direct attention to the laws of physics and these laws govern results obtained.

All solutions are subject to condition and influence which determine their nature.

When a substance is brought into contact with a solvent it enters the solvent by reason of a force quite as a gas will enter a vacuum, wherein diffusion takes place until homogenity is produced and a definite ratio is established between the concentration of the substance and solvent.

Saturated solutions are solutions in which equilibrium between the substances as solid and solvent is brought about when the concentration of the non-dissociated portion of the substances has reached a definite value. This value is constant and definite for each particular substance in relation to its solvent at any given temperature and pressure.

In true solutions the accepted ideas are fundamentally based upon the solvate theory of solution and this in particular as generalization holds that there is a reciprocal exchange between substance and solvent in which the substance not alone is combined with the solvent, but also that the solvent combines with the substance.

Colloidal solutions on the other hand are solutions of substances in which the

substance is not dissolved but is dispersed in the presence of a solvent and according to fineness of division is termed either a colloidal solution or colloidal suspension.

To the latter class belong most of our pharmaceutical preparations as fluid extracts, mucilages, most tinctures, syrups, aromatic waters, emulsions, etc.

A knowledge of the physical properties of substances will determine the class of solutions which substances and solvent will produce.

Perhaps of greater concern to pharmacy is, not the scientific aspect of the various factors which enter into the problem of solutions, for that is experimentally obtained and results given in books of references, but attention is directed more to the factor of stability and possible changes which may occur from time of preparation until such are used, yet a knowledge of the fundamentals which enter in the preparation of solutions will often obviate and prevent disaster. Of the many solutions called for aqueous solutions by far predominate and in this relation we will first consider such as to stability. We must of necessity direct our attention to the physical properties and knowing such we can give definite answer to question of permanence.

Decomposition is a change brought about in solutions wherein degree of inherent energy is weaker than the energy of influence to which it is exposed, whether this be through the agencies of light, heat, electrical current, bacteria or enzymes.

The application of this can be drawn still closer and we can classify substances in relation to decompositions a little more definitely and predicate. That all inorganic substances which per se are strongly electrolytic will produce permanent aqueous solutions even to very high dilution. Similarly all derived organic substances with strong electrolytic radicals will produce permanent aqueous solutions.

Inorganic substances of weak electrolytic activity will decompose in aqueous solution even in high concentrations.

Derived organic substances are divided into two classes dependent upon inherent potential energy—those of strong influence giving rise to permanency in aqueous solutions and those of weaker activity subject to decomposition.

To obviate decomposition in solution gives rise to a number of procedures such as the addition of substances to act as preservative in case of solution being subject to decomposition by bacteria. Sterilization and subsequent means to exclude possible contamination, this being effected in various ways to meet the need of the occasion.

Under conditions of substances in solution, as solutions being affected by agencies of light or heat, this to great extent is prevented by precautionary measures and further attention to exclude these agencies.

The decompositions in solutions that may arise through reaction of different substances are subject to the known reaction which chemistry now, but physics to come, determines and can be wholly eliminated from knowledge of the principles involved.

Clarity—This condition of solutions is wholly dependent upon constituents and nature of purposes intended.

Processes entering for classification are dependent upon physical means and determined by nature of object sought.

Solutions other than aqueous for which occasion requires preparation may include an infinite range encompassing every conceivable substance with respective admissible solvent from the mechanical suspension as mixture to the typical solution, yet each and all are dependent upon the influences of broad generalizations applying.

It is not the purpose as perhaps was intended by Mr. Osseward when he requested me to contribute a theme along lines of practical pharmacy to detail specific instances upon individual solutions for that in itself would of necessity be very limited owing to lack of experimental data, yet it would no doubt prove intensely practical and I trust the future will permit a presentation along such lines.

The foregoing, though somewhat concise in statement, will furnish themes for future elaboration and if sufficient interest is aroused, it will have served its purpose at least, for a subject which is infinite in magnitude, for in its application to observed phenomena all such is dependent upon solution.

THE COÖPERATION OF SCIENCE AND INDUSTRY.*

A. R. L. DOHME.

Individuals, firms, corporations, states and nations have begun to realize and appreciate that coöperation among themselves for the attainment of any end is essential if the best attainable results are to be achieved. Let us take as a concrete example for all the above the rather remote but timely and pertinent subject of price cutting and the European war, both of which are menacing and crying evils.

Price Cutting—A manufactures a standard article which sells at 50 cents retail according to A's business plan. It probably costs 20 cents to produce and with advertising and the profit to the jobber and retailer nets the manufacturer 10 cents profit. The retailer instead of coöperating with the manufacturer and making his 25 percent net profit on it cuts the price and makes 5 percent, using it to advertise his store as a place to buy cheaper than at other stores. If it only went so far there would not be lack of coöperation and the manufacturer would be satisfied. Instead, however, the retailer induces the customer to buy his own manufactured article upon which he makes a good profit, or the retailer is seduced by competing manufacturers to buy a bulk supply of the same article under another name, which is sold in place of the originally advertised and controlled article. Both of these methods show entire absence of coöperation between the retailer and manufacturer and result in lack of real success to the manufacturer and the retail trade as a whole.

The European war is the result of commercial rivalry or rather lack of coöperation. If nations had been satisfied to live and let live and permitted each other to work out to perfection unmolested those products of nature and industry espe-

* Read before Scientific Section, San Francisco meeting.

cially adapted to and characteristic of that nation, there would have been no European war. In this all nations are more or less at fault. Labor and capital must coöperate if they are to progress and get on peaceably together. As soon as capital gets more than its just share of the profit labor will rise in arms, and as soon as labor is misled by bad and badly intentioned leaders to exact more than its just share, capital will protest. As soon as coöperation on a mutually satisfactory basis is established and maintained strikes and labor problems will cease.

The reason why Germany has progressed so much faster than any other nation in most lines of industry and why "Made in Germany" caused a war of destruction unequalled in history is, because in Germany coöperation exists in everything—government, education, industry, art, science, and the home. I would like at this time to refer to only one phase of coöperation, viz., the coöperation between science and industry because to my mind it is most typical of methods and results and, because as chemists it concerns us especially. Germany's preëminence in scientific education and university training is universally acknowledged for any one who has attended her universities knows that every nation sends many of her favorite sons there to be educated. In those halls and laboratories you see the American, Frenchman, Swede, Norwegian, Russian, Englishman, Japanese, Chinaman, Italian, Spaniard, East Indian, Greek, Turk, etc. This education and this research into the hidden secrets of science would of themselves help little to advance Germany. She goes further, and when her professors, teachers and students select a subject to investigate they do not always take up an abstruse subject which is only of purely scientific interest. Most frequently they take up some of the troblesome problems which are today confronting the industries of Germany and thus, besides gaining the experience and training their minds and hands need, they at the same time solve one of the many knotty problems which the manufacturer has unsuccessfully encountered and failed to solve.

My experience is probably typical of all. My "arbeit," as such research work is called in Germany was selected from about fifty available problems sent by the manufacturers to the universities for solution. The professor took me into his private laboratory and there, exposed upon a series of tables were samples of what was wanted and what was available as raw materials or by-products to be used in the work. The professor considers that he is doing his country a service every time he can help solve a problem of some industry and, as a result, all the great universities are coöperating all the time with the industries. The result speaks for itself:—German prestige in almost all lines and an industrial and commercial boom during the past 40 years unprecedented in history. The result of a coöperation instead of a holding aloof. It is this same coöperation that is enabling that great nation to hold at bay and practically defeat the entire concert of great nations of Europe, and Asia and Australia and Canada. The principle of coöperation is applied in practice and in spirit from the lowest private in the ranks, charwoman, housewife and children in the home to the highest head of every institution, civil and military. It has been a slogan that "in union there is strength." To my mind a better and truer slogan, because it also embraces the former, is "in coöperation there is success."

Contrast this with the attitude of our universities in their relation to our indus-

tries. They stand at bay, each too dignified to lower themselves to approach the other. The university professor considers it beneath his dignity to soil his hands with commerce or industry and the manufacturer considers it beneath his dignity as a successful, practical man to ask help of a man or an institution which considers and recognizes only the theoretical and disdains the practical side of any problem. Neither of them consider for a moment their common country and its progress and development among the nations of the world. To my mind the one nation is inspired by patriotism in its professional men, the other is inspired by personal advancement at the expense of the country and every one else. While this arraignment may be a trifle severe—for there are exceptions to it—the fact remains that there is more truth than imagination or exaggeration in it. The thing for our universities to do for our industries is what the Rockefeller Institute is doing for medicine. To so study diseases that the net result is not a splendid article in a journal or a book to glorify the author and discoverer, but instead an ability and means of curing them, preventing them, or doing both which is best of all. Let the men who are being trained in our universities fit themselves, each for some chosen industry so that when he completes his course he will know his science or subject thoroughly and besides will know enough about its application to some industry, say the manufacture of glass, so as to be able to establish a research laboratory for some glass factory and work out for them improvement in manufacture, further adaptation of glass to industries and possible utilization of waste products for producing economies in manufacture. In this way all our industries will progress and our country will prosper and grow in wealth, importance and contentment at several times the rate it is now. Our institutions of learning, hospitals, etc., should do more than this. They should welcome an opportunity to let any manufacturer try out or test his products in their clinics, laboratories, shops, etc., instead of hanging out a banner "noli me tangere."

Let me in closing point out the instance of what a university man so trained can do for an industry. The man was my fellow student who did his final preparation for the degree of Doctor of Philosophy with me for two or three months. (Another instance of the same spirit of coöperation, this time in study.) This was in 1889. The institution was the Johns Hopkins University. He had paid a little attention to petroleum because he saw in it a great future. He entered the employ of the Standard Oil Company. He worked conscientiously and applied practically all the knowledge he had learned at his alma mater. The result is the unexcelled world-leading petroleum industry. He is now its Second Vice President and he can feel most proud, although I know him to be a most modest man, because he has accomplished something for each of his fellow citizens in producing cheaper and better kerosene, gasoline, oil, wax, etc., than they had before and because, above all, he has placed his country in his line on the top rung of the ladder, for the Standard Oil Company is known the world over and is perhaps the most successful and extensive corporation known in the world. This case cannot be claimed to be an instance of the coöperation of which I am writing because the university did not especially prepare him for his work, rather did it expect him to become a professor; but he worked out the result for himself,

because he was eminently practical. This result shows however what is possible when science and industry coöperate. Why not train men for every industry so that glass, leather, sugar, paper, steel, iron, copper, cellulose, cotton, wool, bricks, cement, laundrying, silk, fertilizers, chemicals, dyes, etc., etc., can progress and excel just as did the petroleum industry under the skillful scientific guidance of William Merriam Burton.

The coöperation of science and industry can achieve this, and in my opinion nothing else ever will achieve it. In fine, the next great advance and development that this country will witness will be in her industries when these become standardized as the result of the coöperation of the science of the university with the practice of the factory, said coöperation to begin in the university and *not* after leaving the university. May this great advance come about now when the world is paralyzed by the clash of arms and the decimation of human lives and needs the help of our country more than it ever will. Let me in conclusion suggest that the Chamber of Commerce of the United States of America, a most efficient product itself of coöperation, call a conference of the heads of all our universities and of all our great industries and at that conference proclaim the gospel of "coöperation spells success" and as well, forge the link which will weld into an indissoluble union science and industry.

INCREASE IN THE ACIDITY OF HYDROGEN PEROXIDE UPON STANDING.*

C. F. RAMSAY AND A. M. CLOVER.

Most brands of hydrogen peroxide which are found upon the market are labeled as conforming to the requirements of the U. S. P. In the manufacture of this product it is not a difficult matter to properly regulate the amount of free acid, which must be below 1/100 normal. In Bulletin No. 150 (1912) of the Bureau of Chemistry, by Kebler, Warren and Ruddiman the fact is brought out, that most commercial brands of peroxide are excessively acid. The samples examined by these investigators were purchased from wholesalers so that they might be obtained in as fresh condition as possible. The acidity and strength were determined upon opening and the stability was ascertained by subsequent titrations. Apparently only one determination was made of the acidity.

From observations which we have incidentally made during a period of several years, we have been lead to believe that the unusually high acidity frequently noted in peroxide which contained acetanilid, is due in most cases to an oxidation of the preservative; for we have frequently observed that samples containing this substance gradually increase in acidity on standing.

The fact is well known that hydrogen peroxide containing acetanilid often takes on a yellowish-green color, as well as a disagreeable odor, due to the oxidation of the preservative, and we have observed that this change is accompanied by a loss in the strength of the active substance. A very stable peroxide does not develop a color even on long standing, while this effect is soon noticeable in a product

*Read before Scientific Section, San Francisco meeting.

which is rapidly decomposing. In the latter case, it can be readily seen that substances giving rise to color and odor are only the intermediary steps in the attack upon the preserving body, for the solution in time again becomes colorless. We have found that a solution of hydrogen peroxide, which was practically free from all impurities will lose nearly 50 percent of its strength, if kept for a year in a glass-stoppered bottle in the dark. By adding a small amount of acetanilid to the solution, the decomposition is reduced to 3 percent. If however we added acetanilid to a peroxide containing impurities capable of affecting it catalytically, the decomposition while temporarily retarded, finally resulted in the complete destruction of the benzene ring, apparently with the formation of substances having a high acid value. Kebler, Warren and Ruddiman (Bulletin 150, p. 22) failed to find acetanilid in some samples in which its presence was admitted on the label, and in another case only traces were found. It appears from their figures that in all these cases the peroxide itself was decomposed to a great extent, and we are justified in assuming that the preservative had been destroyed by oxidation. These authors also concluded in a general way, that the effect of acetanilid upon different lots of peroxide is not the same, so far as preventing their decomposition.

Kebler, Warren and Ruddiman (Bulletin No. 150, p. 22) state that the acidity of peroxide solutions is determined preferably by direct titration using phenolphthalein as indicator. Our experience has been the same, and we have satisfied ourselves that if the titration with N/10 caustic is carried just until a faint pink is reached, the presence of the hydrogen peroxide in the solution has little influence upon the results. In the experiments described below the acidity has been determined in this way. The hydrogen peroxide was determined by means of N/10 potassium permanganate, standardized just before use.

Samples of a number of brands were purchased from wholesale supply houses in New York, with the object of obtaining as fresh material as possible. The strength of these samples as well as their acidity, were determined when they were received, and after they had stood for 1 year in subdued light at ordinary temperature. The results are as follows:

TABLE I.

Brand No.	Original Strength in H_2O_2	Final Strength in H_2O_2	Original Acidity in N/10 KOH for 50 cc.	Final Acidity in N/10 KOH for 50 cc.	Acetanilid Present and Stated
1	3.31%	3.05%	4.15 cc.	5.8 cc.	yes
2	3.21	2.59	4.6	5.6	yes
3	3.03	2.76	2.5	3.2	yes
4	3.13	2.89	4.7	7.2	yes
5	3.32	3.17	1.7	4.5	yes
6	3.51	3.18	2.5	5.7	...
7	2.93	1.41	5.5	12.6	yes
8	3.07	.94	4.1	5.0	yes
9	2.48	.30	1.4	.8	...
10	3.11	1.10	5.7	13.3	yes
11	3.02	2.81	2.8	4.4	yes
12	2.79	1.02	2.9	3.1	...
13	2.93	2.68	1.7	2.5	...
14	3.12	1.46	4.2	4.6	yes

All of these products are represented to be U. S. P. except Nos. 6, 7, 9 and 14. Product No. 9 is stated upon the label to be about 4½ percent. It probably contained no preservative as it was found to be very unstable, and there was no increase in the acidity after a year's standing. Products 6, 9, 12 and 13 contained no acetanilid according to label. Numbers 6, 12 and 13 were shaken out with ether, followed by chloroform, and a distinct residue so obtained in each case. The samples were small, so that the residues so obtained could not be positively identified. In each case they were found not to respond to the isonitrile reaction for acetanilid. Product No. 12 kept very poorly, but there was practically no increase in acidity. Numbers 6 and 13 kept tolerably well and showed considerable increase in acidity. Among the samples containing acetanilid, the relation between decomposition and increase in acidity is not uniform, although numbers 7 and 10 which show the highest increase, are seen to have been largely decomposed.

In order to test out this matter still further, we attempted to prepare a small experimental lot of hydrogen peroxide in a practical way, although we used every precaution to obtain as pure and stable a product as possible. The strength was adjusted to a little over 3 percent, the acidity to about one-half of that permitted by the U. S. P., and three grains acetanilid were added to each pint. The solution was filled into amber bottles which had been previously washed with warm water, rinsed with distilled water and allowed to dry. The exact strength and acidity of these bottles was determined at the start and they were then allowed to stand for a year, alongside the samples previously discussed.

Initial strength, 3.20 percent.

Initial acidity, 2.85 cc. N/10 KOH for 50 cc.

At the end of the year the results were as follows:

TABLE II.

Bottle No.	Final Strength in H_2O_2	Final Acidity in N/10 KOH for 50 cc.	Bottle No.	Final Strength in H_2O_2	Final Acidity in N/10 KOH for 50 cc.
1	3.06%	4.3 cc.	16	3.06	4.2
2	3.05	4.7	17	3.05	4.4
3	3.05	5.0	18	3.08	4.2
4	3.06	4.3	19	3.05	4.4
5	3.08	4.4	20	3.06	4.6
6	3.06	4.3	21	3.06	4.4
7	3.06	4.6	22	3.05	4.8
8	3.07	4.8	23	3.05	4.3
9	3.07	4.3	24	3.08	4.5
10	3.08	4.5	25	3.05	4.6
11	3.06	4.4	26	3.08	4.4
12	3.06	4.6	27	3.06	4.5
13	3.06	4.2	28	3.06	4.7
14	3.06	4.4	29	3.06	4.3
15	3.06	4.5			

It is evident from the results of Table II that in the case of a relatively stable product, there will be a decided increase in acidity after a year's time; however, if the initial acidity be kept low, the final value will not exceed the limit allowed

by the U. S. P. On the other hand the increase in acidity of the various commercial products shown in Table I, shows that most manufacturers have not yet been able to control the uncertain factors which effect the stability of hydrogen peroxide, and the consequent increase in acidity.

The cause of the increased acidity must be due to a disintegration of the benzene nucleins of the acetanilid. In several cases the increase is much greater than can be accounted for by simple hydrolysis of acetic acid from the acetanilid.

The objection to a high acidity for hydrogen peroxide rests upon its use as a mouth wash. The organic acids formed by the oxidation of the preservative will exert no deleterious effect upon the teeth, and it is with the original mineral acidity alone that we are concerned. However, our present knowledge of the matter affords us no practical means of distinguishing between the two.

SCIENTIFIC LABORATORY OF PARKE, DAVIS & CO., DETROIT, MICH., June 28, 1915.

DISCUSSION.

Mr. Scoville: The point is these gentlemen have shown that when acetanilid is employed, in the decomposition which ultimately follows, there is more acid formed. We know that acetanilid has the temporary effect of a preservative agent. But the time comes when the hydrogen peroxide gets the best of it and decomposes the acetanilid itself, and then we have an odor and discoloration, which are the two objections to acetanilid as a preservative. They show the solution is more acid than it was before the acetanilid began to decompose; in other words, that excess of acidity in hydrogen peroxide solution does not necessarily mean that the excess has always been there; the acidity is partly formed by the decomposition of the acetanilid. Now, they don't give any recommendation or any definite explanation of that. They simply give a number of tables showing the facts, the acidity being determined when it was fresh and at the end of two years. Are there any questions on that?

Mr. Long: Do they figure out any possible reaction to account for the hydrolysis effect?

Mr. Scoville: They don't explain it; they have not attempted to give any explanation.

Mr. Long: Is it supposed to be acetic acid?

Mr. Scoville: Well, I should suppose so, but they do not say so.

Mr. Long: That is all I care to ask about.

RADIUM AND THE MEASUREMENT OF RADIUM EMANATIONS.

S. W. STRATTON, DIRECTOR OF THE BUREAU OF STANDARDS, WASHINGTON, D. C.

As practically all substances contain traces of radium, and consequently of radium emanation, the real problem that confronts the pharmacist and the physician is the determination of *how much* radium or radium emanation a preparation, or water, must contain in order that its therapeutic value may be appreciably affected thereby. If a lower limit to this quantity can be agreed upon, and if producers are required to state in *unambiguous units* the actual radium or radium emanation, content of their preparations, then the possibilities of successful fraud will be greatly limited.

As an example of the manner in which the use of ambiguous units assists the fraudulent, consider the "Mache unit" as a measure of radium emanation. This unit has been defined as that amount of radium emanation which when mixed

with air will produce such a rate of ionization[1] of the latter that the saturation current[2] will be $\frac{1}{100}$ of an electrostatic unit of current.

In order to measure this current the air and emanation must be enclosed in a vessel of some kind. It is evident that some of the alpha particles—these produce the ionization of the air—will strike the walls of the vessel and be there absorbed, thus being prevented from producing their full amount of ionization. Consequently the observed saturation current will be less than it would be were there no absorption by the walls. The percentage reduction thus caused in the saturation current is proportionate to the ratio of the total area of the walls to the total volume of the vessel. Whence it is evident that the observed saturation current corresponding to a specified amount of radium emanation will depend upon both the size and shape of the ionization chamber employed. The current alone does not suffice to define the amount of emanation; it is equally necessary to specify either the size and shape of the ionization chamber to which this current applies, or to specify that the observed current is to be corrected for the effect of the walls of the chamber. Since, whatever may be the shape of the chamber, the effect of the walls becomes ever less and less as the size of the chamber is made greater and greater, becoming exactly zero when the size of the chamber is indefinitely great, it is usual to speak of the value of the current after the correction for the walls has been applied as the saturation current in an infinitely large chamber. In actual practice large chambers are inexpedient as the voltage required to produce the saturation current in them is excessive. The correction that must be applied to the saturation current observed in any cylindrical vessel, of the kinds ordinarily used, in order to eliminate the effect of the walls has been determined. For chambers of a common type this correction amounts to 30% of the current.

Some use the term "Mache unit" to denote that amount of emanation for which the saturation current *observed* in such a vessel is 1/1000 of an electrostatic unit; others use it to denote that amount for which the saturation current *after the correction* for the walls has been applied is 1/1000 of an electrostatic unit. The same term is used to denote two quantities which differ by 30%.

This is not all. The current that is observed depends upon how long the emanation has been in the vessel. When the emanation is first introduced, the current increases rapidly, then more slowly, becomes very nearly constant about five hours after the emanation is introduced and then very slowly decreases. Observers have differed as to the value of the current to use. Some have used the Mache unit to denote that amount which will give the specified current when the

(1) When a gas is subjected to the radiations from radioactive substances some of its molecules are broken into two oppositely electrified portions. These charged portions are called ions; the process is spoken of as an ionization of the gas; and the vessel containing the gas that is being ionized is called the ionization vessel, or chamber.

(2) The electric current which passes through a given metallic conductor is directly proportional to the applied voltage; this, however, is not true of the current through a gas. In the latter case the current increases less rapidly than the voltage, and finally reaches a value beyond which it cannot be increased even though the applied voltage be increased many fold. This maximum current is known as the stauration current. The voltage required to produce the saturation current depends upon the rate of ionization of the gas, and upon the size and shape of the ionization chamber. The smaller the rate of ionization and the smaller the distance between electrodes of the ionization chamber, the smaller will this voltage be.

emanation is *first* introduced into the vessel; others have used it to denote that amount of emanation which, *when in equilibrium* with its products of disintegration, will give the specified current. *The first is nearly three times as much as the second.*

Although the best practice requires that this unit be defined in terms of the current produced by the emanation without its products of disintegration and in a vessel of infinite size, still the other uses are sufficiently numerous to protect one who desires to use them for fraud.

In the above the term "Mache unit" was used to denote the *amount* of radium emanation. It is frequently so used; but in its original use and as used by many it denotes a concentration of emanation. A water is said to have one Mache unit if the emanation *from one liter* of the water will, under specific conditions, produce a saturation current of 0.001 electrostatic unit.

Good authority can be found for both uses. Here again fraud is possible. If a bottle containing two liters of water is said to contain 2000 "Mache units," does this mean that *each liter* contains sufficient emanation to produce in air such an ionization that the saturation current under the specified conditions is 2000 x 0.001 electrostatic units; or is there only this much in the entire bottle?

All of this ambiguity can be avoided by the use of a carefully defined unit. Such a unit which has international sanction is the "curie." This is defined as the amount of emanation which can exist in equilibrium with one gram of radium (element). The latter is exactly defined by the International Radium Standard which is preserved in Paris, and with which the standard of this Bureau has been compared. One microcurie (=one millionth part of a curie) is approximately equal to 2700 times that amount of radium emanation which is designated by the "Mache unit" under its best sanctioned usage as a *unit of emanation.* Consequently one thousandth part of a microcurie (=one millimicrocurie) corresponds to 2.7 of these "Mache units."

Concentrations of emanation should be expressed in terms of *curies per liter.* Then a water containing 2.7 "Mache units," as used in the most approved sense as a *concentration unit,* would be said to contain one millimicrocurie per liter. If preferred, the expression "one thousandth of a microcurie" may be used instead of "one millimicrocurie."

There is likewise an indefiniteness in many statements referring to the use of sealed specimens of radium salts for gamma ray treatment. It is frequently stated that "so many milligrams of radium bromide," or "so much radium chloride," or "so much radium of such an activity," is used. This variation in the form of statement not only introduces confusion, but encourages fraud; especially is this true of the last.

Consider the last form first. The statement means that the tube contains the stated amount of salt and that an infinitely thin layer of a fair sample of this salt will, per gram of the salt, produce in a suitable alpha ray electroscope a saturation current that is a certain multiple of that produced per gram of uranium by an infinitely thin film of a uranium compound. Neither the weight of the salt in the tube, nor such a comparison can be made without opening the tube and removing

the salt. Even then the comparison is not practical except for very low grade salt. In practice it is never attempted.

By very careful work the activity, as defined above, that is to be expected from a salt containing a given percentage of radium has been determined to a certain low order of precision. From this work we can compute approximately the amount of radium that a tube said to contain "so much radium of such an activity" should contain. By gamma-ray measurements, which can be made without opening the tube, the total radium content of the tube can be determined. *In no case that has come to the attention of this Bureau has the actual radium content of such a tube been nearly so great as was to be expected from the stated amount and activity of the salt.*

As the dealer makes no claim regarding the amount of radium the tube contains, the establishment of fraud upon the basis of this discrepancy would be impossible. Owing to the difficulties involved in the direct measurement of the activity, and to uncertainties somewhat similar to those mentioned in speaking of the "Mache unit," the establishment of fraud even by a direct study of the "activity" of the salt would be most difficult. Such a study would also be very expensive, in fact out of all proportion to the value of any such tube that has come to our attention.

Consider now the first two forms of expression which were mentioned. Both radium bromide and radium chloride exist in two forms, viz., the anhydrous and the crystalline. The terms "radium bromide" and "radium chloride," unless further qualified, may be applied with equal justification to either salt. The crystallized bromide contains 8.5% less radium than the anhydrous; and the crystallized chloride contains 10.7% less than the anhydrous. When the price of radium is considered and one takes into consideration the fact that it is solely the radium that gives value to the salt, these differences are well worth considering.

In at least one case that has come to the attention of this Bureau the purchaser specified that he was to receive so many milligrams of radium bromide. He did not realize that there were two bromides, and even after the tubes were delivered and paid for he did not know which bromide they were supposed to contain. In this case the uncertainty regarding the amount of radium he should have received amounted to about $300.00.

All such uncertainty can be avoided and the work of different men can be readily intercompared if all will express the content of each tube or preparation, and require the dealers to guarantee the content of all tubes and preparations in terms of the number of milligrams of radium (element) contained in them. The basis should of course, be the International Radium Standard.

It is also most desirable that the term "milligrams of radium" be used in all cases to denote solely the amount of the chemical element radium that is contained in the tube, or preparation. "Radium" is the name of a definite chemical element and its use as an abbreviation for "a radium salt" or for "a preparation containing radium" not only fails to conform to the recognized usage of chemical terms, but also introduces confusion.

Anything you or your committee can do to bring about the universal adoption

of the International Units (the "curie" and the "milligram of radium"), and the precise use of the word "radium" will be of great service to all concerned.

THE MEASUREMENT OF RADIUM EMANATION.

Method: The measurement of radium emanation is based upon the fact that, when it is mixed with air, the alpha radiation from the emanation and its products of disintegration ionize the air and thus make it a conductor of electricity.

Other things being the same, the rate of this ionization is directly proportional to the amount of radium emanation present, and thus may be used as a measure of the latter.

The maximum current that can be passed through a given gas is called its saturation current; it is a direct measure of the rate of ionization of the gas, and can be measured in various ways. The simplest method is to determine the rate at which an insulated charged body loses its charge when immersed in the gas. In current practice the leaf of an electroscope is made a part of the charged body, and the rate of loss of charge is measured by the rate of fall of the leaf. If the leaf is timed always over the same portion of its path the observed rates will be proportional to the current through the gas, and, therefore, proportional to the rate of ionization.

Ions are being continually produced in a gas even when no radium emanation is present. The observed rate of fall of the leaf of the electroscope (often spoken of as the drift of the leaf) measures the total rate of production of ions, and, consequently, is greater than it would be were no ions produced except by the emanation present. It must, therefore, be diminished by the drift that is produced by what we may call the natural rate of ionization of the air, before it can be used as a direct measure of the amount of emanation present. The drift that is observed when there is no emanation present is known as the "blank drift" of the instrument. It includes the effect of any slight leakage of electricity over the insulating supports, as well as the leakage due to the natural ionization of the air.

When air mixed with radium emanation is filtered through a plug of absorbent cotton and admitted to a vessel which had previously been partially exhausted, the emanation itself is at first the only radioactive element present. However, it immediately begins to disintegrate with the formation of a series of other radioactive elements. The alpha radiation from these also ionizes the air and so the ionization at first increases rapidly with the time. The products of disintegration, being themselves radioactive, are continually disintegrating and so a time arrives when they have accumulated to such an extent that their rate of disintegration just equals the rate at which they are formed; they are then in transient equilibrium with the amount of emanation then present. After this they decrease in amount at the same rate as the emanation itself decreases from decay, equilibrium being always maintained.

Consequently the rate of ionization of the air in the vessel at first increases rapidly, then more slowly, and after about three hours becomes, and for some time remains sensibly constant. After this it slowly decreases, at the rate of a decrease of one-half in 3.85 days.

Owing to this variation in the ionization it is advisable to take all measurements at the same time after the admission of the emanation; it is best to choose this time as three to three and three-fourth hours, for then a practically steady state has been reached and a slight difference in the times will produce no error.

In order to be able to derive from the corrected drift of the leaf the amount of emanation introduced into the vessel it is necessary to know the corrected drift which corresponds to a known amount of emanation. This depends upon the particular instrument and its adjustment and may be determined by an experimental standardization. It also depends upon the density of the air in the ionization chamber; variations in the density of the atmosphere at a given place will seldom cause changes of over 5% in the observed current and the actual amount can be readily computed.[3]

So far only the case of emanation mixed with air has been considered. If the emanation is dissolved in water or other liquid, or absorbed in a solid it must first be quantitatively removed and mixed with a suitable volume of air and then measured as described above. Boltwood has shown that radium emanation can be completely removed from water by vigorous boiling.

Units. The only unit of emanation sanctioned by the International Radium Congress is the "Curie." This is defined as the amount of radium emanation which can exist in equilibrium with one gram of radium (element).

Submultiples of this unit are designated by prefixes as in the case of other metric units. The more important of these submultiples are given in the following table.

Designation	Emanation in equilibrium with
1 curie	1 gram of radium
1 millicurie=0.001 curie	1 milligram of radium
1 microcurie=0.000001 curie	1 microgram of radium
1 millimicrocurie=0.000000001 curie	1 millimicrogram of radium

The prefix "micro," meaning small, has long been in common use in electrical measurements to denote the one millionth part of the unit. A suitable, and common abbreviation for it is the Greek letter *mu* (μ); hence μ might be used as an abbreviation for micro curie, and $m\mu c$ for millimicrocurie.

One millimicrocurie is equal to 2.7 times the amount of emanation designated by the more common of the numerous "Mache units." The latter term having been used in several senses, and being unsanctioned by the International Congresses should be discarded. In fact Mache himself thoroughly disapproves of its general use.

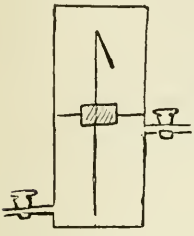
Apparatus: The apparatus needed includes: (1) A suitable electroscope with attached ionization chamber which can be exhausted and then filled with the gas under test; (2) A microscope for reading the position of the leaf of the electro-

(3) Duane has shown that the relation between the value I of the saturation current observed in a cylindrical ionization chamber three hours after the introduction of the radium emanation is related to the value Ic that would have been observed had the walls produced no effect, in the manner shown by the equation

$$I = Ic\ (1 - 0.572\ S/V)$$

where V is the volume of the ionization chamber and S is its internal superficial area. The coefficient 0.572 applies to air at 15° C. and 760 mm. pressure, it varies inversely as the density of the air.

scope, as means must be provided for securely fastening this microscope in a suitable position fixed with reference to the electroscope, it is advisable that it be attached to the electroscope itself; (3 A stop-watch for the determination of the rate of motion of the leaf of the electroscope; (4) A piece of sealing wax, or other means, for charging the electroscope; (5) A good aspirator, or other means, for partially exhausting the ionization chamber; (6) A standard of radium emanation; and (7) Apparatus suitable for removing and storing the gas contained in the water, or other preparation under test.



Frequently the leaf of the electroscope is in the ionization chamber itself, but there are many advantages in having it in a separate compartment entirely cut off from the ionization chamber; somewhat as shown in the sketch. If many measurements have to be made it is very desirable to have the two compartments separable so that the electroscope proper can be securely mounted and any one of several ionization chambers can be attached to it, as desired.

In the absence of a standard dilute solution of a radium salt, many observers have used for preparing standards of radium emanation specimens of pitchblendes, of which the uranium content has been carefully determined. Since the weight of the radium contained in any specimen of unaltered pitchblende has been shown[4] to be equal to 3.33×10^{-7} times the weight of the uranium, in the same specimen, the amount of radium can be calculated when the uranium content is known. If a known weight of this ore has been kept in a closed vessel for a month or longer, then the emanation in the vessel, and ore, will have come to equilibrium with the enclosed radium and consequently its amount will be known. If, now, without opening the vessel, the enclosed ore is treated chemically so as to be dissolved and thus to set free the emanation retained in it, all of the emanation will become mixed with the other gases in the vessel and it is now possible to transfer this known amount of emanation to any vessel we desire.

Whenever a standard radium solution is available its use is much to be preferred. Radium solution should be strongly acidulated with hydrochloric acid. After a volume of a solution containing a known amount of radium has been kept in a gas-tight vessel for a month or more the amount of emanation in the vessel will be that which is in equilibrium with the amount of radium enclosed. Simple boiling of the solution will drive all of the emanation out of the solution, and it can then be transferred as desired. If the vessel containing the solution is then closed and put aside the same amount of emanation will have again collected in it by the end of another month; and so on. If it is undesirable to wait for a month the amount of emanation that has accumulated up to a given time after closing the vessel can be calculated from the time constant of radium emanation.

This Bureau is prepared to supply such standards at $5.00 each.

Adjustment: The eyepiece of the microscope must be so adjusted that the scale of divisions in the microscope is in good focus. Then the microscope must be so adjusted that, when the electroscope is charged so that the leaf makes an angle of 30° or 40° with the vertical, the leaf is near the center of the field of the micro-

(4) Heinmann and Markwald, Physik. Ztschr. 14 p. 303, 1913.

scope; and, when its charge is varied, remains in focus wherever it may be in the field. The scale of divisions and the leaf must both be in good focus at the same time. When this is the case a lateral motion of the eye will not cause an apparent motion of one with respect to the other.

Many trials may be necessary before a satisfactory adjustment is secured. Having secured this adjustment the microscope should be securely fastened with reference to the electroscope; and should not again be moved.

Standardization: (1) Determine the blank drift. To do this exhaust the ionization chamber and refill it with dried and filtered air drawn from out of doors. Do this several times. Then charge the electroscope so that the leaf stands near the center of the field of the microscope; and by means of the stop-watch determine the rate at which the leaf falls. This rate should be very slow. If it falls one division of the microscope scale in 5 minutes, then the rate of drift is 0.0033 divisions per second. This is called the "blank drift," or the natural drift of the leaf.

(2) Determine the drift when a known amount of emanation is in the ionization chamber. To do this, exhaust the ionization chamber and then fill it with the air and emanation from the emanation standard, and so much outside air as may be necessary to make the pressure inside the ionization chamber equal to that outside. All of this air should be dried and filtered. Close the ionization chamber and leave it for about 2½ hours.

At the end of this time charge the electroscope so that the leaf stands beyond the extreme end of the scale in the microscope. Keep it charged for a half an hour. Then, by means of the stop-watch, determine the time required for the leaf to drift from one end of the scale to the other. Then recharge the electroscope and repeat. This should be done several times.

Suppose that the number of divisions is 50, and the average time of drift is 1 min. 19.62 sec.; then the rate of drift is 0.628 divisions per second. This is the drift due to the presence of the emanation and its products plus the blank drift. Hence the drift due to the emanation and its products is 0.628-0.003 or 0.625 divisions per second. This may be called the "corrected drift."

If the emanation standard contains 4×10^{-9} gm. (i. e. 4 millimicrograms) of radium, and had been sealed for over a month, then it contained the equilibrium amount (4 millmicrocuries) of emanation; and, if no loss occurred during the transfer, this is the amount of emanation which was introduced into the ionization chamber.

Hence a corrected drift of 0.625 divisions per second at 3 hours after the introduction of the emanation corresponds to the introduction of 4 millimicrocuries of emanation; and a drift of 1 division per second corresponds to 6.40 millimicrocuries.

The ionization chamber should now be exhausted and refilled with dry, filtered, outside air. This should be repeated several times so as to sweep out thoroughly all traces of emanation. This ionization chamber should not be used again until the following day; this delay is necessary to allow the "active deposit" formed upon its interior to decay.

So long as the instrument remains absolutely unchanged the amount of emanation needed to produce a corrected drift of one division per second also remains unchanged. Owing, however, to experimental errors and to the possibility of unsuspected changes taking place in the instrument, the standardization should be repeated several times at the beginning of the work and then at intervals of a month or so even though no change in the apparatus is suspected. Of course, if a change is made or is suspected to have occurred, the apparatus should be again standardized before proceeding with the work.

Measurement of Emanation: (1) Determine the blank drift, as in the standardization. Suppose it is found to be 0.0050 divisions per second.

(2) By boiling, remove the air and emanation from a suitable volume of the water to be tested; collect it above hot water. The volume of water should be so chosen as to give a drift that can be readily timed. Let the collected gases stand for ten minutes to allow any thorium emanation present to decay. Then introduce it into the previously exhausted ionization chamber, as for standardization. After 3 hours determine the rate of drift of the leaf; suppose it is 1.005 division per second. Then the corrected drift is 1.000 division per second; and, consequently, the amount of radium emanation removed from the volume of water used is 6.40 millimicrocuries. Hence, if the volume of water used was 100 cc. the water contains 64.0 millimicrocuries per liter.

Remarks. It is necessary that the amount of emanation to be measured or an accurately known fraction of this amount, be introduced into the ionization chamber without loss. The timing of the leaf must be carefully done and the same portion of the leaf must be used in all observations. In the computations it is assumed that the voltage employed is sufficient to produce the maximum, or "saturation," current; under all practical conditions no appreciable error will result from a lack of saturation if the leaf makes an angle of 30° to 40° with the vertical when in the middle of the field of the microscope, provided that the ionization chamber is not over 10 cm. in diameter. It has also been assumed that the density of the air has been the same in all cases; if this is not true and an accuracy greater than 5% is desired the proper correction must be applied.

The most readily available articles dealing with this subject are probably the following:

B. B. Boltwood: On the radioactivity of natural waters: American Journal of Science (4) 18 pp. 378-387, 1904.

B. B. Boltwood: The Origin of Radium: Philosophical Magazine (6) 9 pp. 599-613, 1905.

H. Schlundt and R. B. Moore: Radio Activity of the Thermal Waters of Yellowstone National Park: Bull. 395, U. S. Geological Survey, 1909.

Scientific Section

Papers Presented at the Sixty-Second Annual Convention

MINUTES OF THE FIRST SESSION OF THE SCIENTIFIC SECTION, INCLUDING CHAIRMAN'S ADDRESS.*

The Scientific Section of the American Pharmaceutical Association was called to order at 2 o'clock p. m. in the Red Room of the Bellevue Hotel, San Francisco, Dr. H. Englehardt in the chair, and W. L. Scoville acting as Secretary, in the absence of Professor William Mansfield.

Chairman Englehardt: The meeting will come to order.

The first order of business, in conformity to the by-laws, will be the Chairman's address.

Mr. Scoville: We will listen to the reading of the Chairman's address.

Dr. Englehardt: In my address, I present a brief account of some of the problems which have had publicity in both the chemical and pharmaceutical periodicals.

The subject of my address is, *The Present Opportunities and Possibilities to Produce Chemicals and Remedial Agents in this Country.*

THE CHAIRMAN'S ADDRESS.

You recall that shortly after the European war started the price of a great many remedies which are usually imported from Europe advanced considerably. I may mention only a few items; carbolic acid which could be purchased at 13c a pound before August, rose to 36c a pound. The price of salicylic acid and sodium salicylate was nearly doubled. That of eserine salicylate was increased 66 per cent, of hyoscine hydrobromide 120 per cent, etc. As might be expected, as the war proceeded, the prices of some of these drugs have gradually increased. Thus we find at the present time carbolic acid selling at $1.25, sodium salicylate at $3.00 and salicylic acid also at $3.00 per pound.

You will note that none of these products are protected by letters patent but are preparations which may be made by any one.

In order to give you a fair idea of how backward we are in this country in producing remedial agents I will quote the "New and Non Official Remedies," the splendid compilation issued by the American Medical Association. This book, as its name implies, contains the names and descriptions of the majority of new and non-official agents, particularly those of a synthetic character, which have been found by clinical experiments to give reliable results. Here about 500 products are given of which 259 are produced in the United States, 181 in Germany, 18 in Great Britain, 7 in Switzerland and 6 in France. On looking more closely into the character of the various products we find that the United States leads in the production of digestive

* Discussions will accompany the papers when they are printed in the Journal, hence omitted from the minutes. By request of the chairman the related paper by Dr. A. R. L. Dohme is printed in this issue.

ferments, medicinal foods and organo-therapeutic preparations. Forty-one of the above classes of products are given in the book, and deducting these from the total of 259 preparations made in the United States leaves 218, of which 163 are serum preparations. Deducting the serum preparations we find that only 68, almost entirely synthetic preparations are produced in this country compared with 168 obtained from Germany. In order to get this figure I have deducted from the 181 German preparations 13 serum products of German manufacture.

From these figures you will note that about two and one-half times as many synthetic products are obtained from Germany as are produced in this country. Most of these products which are of established repute and are most valuable and effective remedial agents, are protected by letters patent and are the result of continuous, painstaking research work carried out in the laboratories of the large manufacturing houses of Germany. It is interesting to note that of the 13 synthetic anesthetics given in the "New and Non Official Remedies" only one is produced in the United States and only one in France. The valuable arsenic compounds, the well-known atropine derivatives are not produced in this country at all, but all originated abroad and are covered by letters patent. The same holds good for bromine derivatives, the large number of hypnotics, the formaldehyde derivatives, antipyretics, quinine derivatives, salicylic acid derivatives, etc.

A compilation of the imports and exports of the United States kindly furnished me by the Secretary of Commerce gives the following startling figures. In the year 1913 we imported 8,155,098 lbs. of carbolic acid valued at $532,211 of which 3,709,294 lbs. valued at $244,147, or 46 per cent, were imported from Germany. Of the 4,964,367 lbs. of duty-free coal-tar distillate preparations, valued at $370,293 imported, 91 per cent came from Germany. Of the 69,805,678 gallons of creosote oil valued at $3,711,340 imported, 34 per cent came from Great Britain. France furnished us with 4,511,229 lbs. casein out of 8,808,891 lbs. imported, or 52 percent.

Dutiable medicinal preparations were imported at a value of $2,265,578, 38.5 per cent of these came from Germany, 22.5 per cent from Great Britain and 17.1 per cent from France, while in 1911 we imported medicinal products valued at $2,145,642 of which 65.5 percent came from Germany, 11.3 per cent from Great Britain and 12.7 per cent from France. The export of medicinal products was almost entirely confined to patent and proprietary medicines valued at $7,110,493 of which 26 per cent were exported to Great Britain.

There is no reason whatever why such articles as carbolic acid, salicylic acid, salicylates, etc., and in fact, all those chemicals not covered by letters patent should not be manufactured in this country. You may recall that soon after the European war started the price of hydroquinone, so widely used in photography, was advanced from $1.50 to $15.00 per pound. This product could no doubt be produced in this country just as cheaply as in Europe. Naturally, at first, a good deal of experimenting would be required to evolve a profitable manufacturing basis.

Most of the imported chemicals are derivatives of coal-tar products. Carbolic acid which is used to such a large extent both for medicinal purposes and for producing explosive could easily be manufactured in this country by fractional distillation of coal-tar, or synthetically by sulphonizing benzene and melting the benzene monosulphonic acid with alkili. I am informed that most of the carbolic acid is now produced by diazolizing aniline and boiling the diazo benzene with water. By rational utilization of the much neglected coal-tar immense quantities of phenol could be produced in the United States. There is no patent in existence covering the conversion

of carbolic acid into salicylic acid by the old but by no means obsolete Kolbe method or by other processes.

Now when we consider that most synthetic products are derivatives of comparatively few fundamental substances which can easily be produced in this country, we are at once convinced that an industry for the manufacture of synthetic remedies can and should be established in the United States. The supply of coal-tar in the United States is more than sufficient to provide for all the crude products required both in the manufacture of medicinal agents and coal-tar dyes. It is estimated that the amount of valuable by-products not at present being utilized in our present coking plants amounts to $75,000,000 annually.

What becomes of the vast quantities of coal-tar produced in this country? It is partly exported to England and Germany where large distilleries are in operation, partly used for increasing the illuminating power of gas, and, although a small amount is distilled here, the largest quantity is no doubt thrown away. Only recently, after the scarcity of organic remedies became acute and the possibility of producing many of these products in this country became evident, have some coal-tar distilling plants been established in the United States. Naturally we should not expect an industry which has been neglected for half a century or more to be put on a paying basis within a few months. It will require a tremendous amount of research work to find out profitable methods for isolating the various products from coal-tar and converting these into organic remedies. This is very probably the reason why chemical plants in this line have been established only on a comparatively small scale. As a rule the American capitalist does not like to tie up his money for several years. He prefers to get a handsome dividend for his invested money as quickly as possible. Putting up a dollar today and getting two dollars in return tomorrow is apparently the aim of the average capitalist in this country.

Another excuse given by capitalists is the fear that when the war is over, preparations produced in this country will be unable to compete in price with those produced in Europe on account of the low wages paid to workmen, even skilled ones, in European countries. In Germany the average workman receives about 15 marks a week, this is less than $4 and a skilled laborer can easily be had for 25 marks or about $6. In other European countries similar conditions prevail. I remember that about 20 years ago when I was manufacturing acetphenetidin in Germany, the finished product stood us about 3.60 marks per kilo or about 38c a pound. This product, I believe is sold today in American markets for about $4.75 per lb.

So much may be said in regard to the production of chemicals which are not protected by letters patent.

Why is it that this country is so far behind in producing synthetic remedies? This, in my opinion, is due to the small amount of research work done in the laboratories of most of the manufacturing houses.

A research chemist is considered by many manufacturing houses as a non-producing person because he may work for months and even years before he is able to produce anything new and profitable.

But how else could we have any synthetic remedies except by elaborate research work? The physiologic action of only a few of the synthetics was discovered accidentally, acetanilid and sulphonal being examples. Most synthetic remedies were produced on a strictly scientific basis by taking as guides the effect of the comparatively simple fundamental product, the structural formulas of remedial agents of established value, such as alkaloids, etc., and the substances which are formed from them in the organism.

Let us consider, for instance, the various cocaine substitutes. When it was

found that cocaine was methyl-benzoyl-ecgonine and when the structural formula for the latter was established, research chemists undertook to find out which of the three most important groups in the cocaine molecule produced the anesthetic action. These three groups were the complicated piperidine nucleus, the benzoyl group and aryl substituted amino group. Based on the supposed action of complicated piperidine nucleus, substances chemically nearly related to this nucleus were prepared, such as the eucaines and euphthalmine, the latter, however, being not an anesthetic but a mydriatic. When it was found that ecgonine did not produce an anesthetic action unless directly combined with the benzoic acid radical, the research chemists thought that the benzoic acid radical combined with simple groups might also produce an anesthetic action. This hypothesis led to the production of such substances as orthoform, subcutin, propaesin, etc. When it was finally established that a substance which contains several ethyl groups linked in a certain manner has hypnotic properties, and when it was further found that tertiary alcohols exert a still greater hypnotic action, the research chemists considered the aryl substituted amino group as essential for producing anesthesia, and thus the most valuable synthetic anesthetics, novocain, alypin, stovain, etc., were produced.

With the exception of stovain, which is a French preparation, all substitutes for cocaine were produced in Germany, the country in which systematic research work has been carried on for more than half a century. The extent to which research work is carried on in Germany is evident when we are told that in the large manufacturing houses such as Elberfeld Farbenfabriken, the Farbwerke Höchst, the Badische Anilin—and Soda Fabrik about 20 percent of the chemists employed devote themselves entirely to research work. Some of these chemists, who, as may be expected, are thoroughly acquainted with every field of chemistry, devote their time to organic and inorganic synthesis; others are engaged in working out the first steps of the manufacturing process of such substances which have been found to be of approved value. All these chemists devote their entire time to this specific work and are not bothered with analytical work or otherwise.

At the first view it may seem that keeping up a research laboratory is a rather expensive undertaking, especially when we bear in mind that comparatively few really valuable therapeutics are discovered by this large number of chemists. But again it is not the isolation of the final product alone which is done by them, but the intermediate products are also thoroughly examined and protected by letters patent in order to close up any loop-hole in the final application for a patent, and thus prevent competitors from obtaining a product by a process similar to that worked out. This is absolutely necessary in countries which have stricter patent laws than the United States. A great drawback in our patent law is that an application for a patent is not published by the Patent Office prior to the investigation and granting of the patent. If this were done in many cases the issuing of a patent would be prevented by proving that the product to be patented had been isolated many years before the patent was applied for. As the matter stands now the manufacturer is confronted by a granted patent, and when he doubts the validity of the patent, he is compelled to take the matter to court and fight it out, usually at great expense.

In this connection I may mention phenacetin and aspirin. How many million dollars have been spent for these two products which never should have been patented in this country because they were well-known and well-defined substances long before the patent was applied for. In no other country in the world are acetphenetidin and acetyl salicylic acid patented.

It is gratifying to know that many of our large manufacturing houses have established well-equipped research laboratories. However, the work in these laboratories is devoted largely to physiological products rather than to real inor-

ganic or organic research work. The time, without doubt, will come, especially if this terrible war should last for many years, when the American manufacturer of chemicals and therapeutic agents will have to equip research laboratories not alone for the purpose of producing chemicals such as carbolic acid, salicylic acid, etc., which now command exorbitant prices or are almost unobtainable, but at the same time to give more dignity to chemistry in America and to show that the American chemist, given the opportunity, can play his part in the achievements of research chemistry.

Now, many persons familiar with the chemical industry in this country claim that thorough research work cannot be done here because we do not have chemists sufficiently qualified to do this kind of work. This may be true to some extent. For my part I am convinced that there are just as many bright students in this country as on the other side of the big pond. But the students in this country, with few exceptions, make the great mistake in believing that having passed through a college or university successfully, they are through with their studies. It is their aim to leave the college as soon as possible to earn the first dollar. This is why so many young men remain in special branches of manufacturing all their life-time, analyze day in and day out, year in and year out fertilizers, steel, ore, etc., and get acquainted with only those methods and discoveries which pertain to their special work. Such chemists, will, of course, never make research chemists, not even in their special line of work. I have found that, with a few exceptions, only those chemists who after having passed their final examinations have done post-graduate work and have kept up with the progress of chemistry and are desirous to keep up with it all the time, are equipped to do accurate research work.

To some extent the low entrance requirements of most colleges have a great influence on the inability of many students to develop into efficient chemists. It is simply impossible to follow the achievements of chemistry with a knowledge of only one language. Most of the important work in chemistry is published in the German language, a good deal in French, and quite recently in Dutch and Italian. Although our domestic periodicals give very good abstracts, particularly those published by the American Chemical Society, it is in many cases impossible to work according to abstracts and, in order to get the details of the operation, one is compelled to consult the original article.

So much for the production of chemicals and remedies. I wish to call your attention to the existence of a somewhat analogous condition in regard to some medicinal plants, the cost of which advanced to abnormal and almost prohibitive figures immediately after the war began, and which still prevail.

Here again the natural resources of our country such as diversity of climate and soil and the large areas of uncultivated lands make it quite an easy matter to grow certain of the drugs now imported and thus create a profitable industry and at the same time avoid dependence upon European markets for our supplies.

It is a question well worth our consideration, and I present it to you in the hope that the possibilities and difficulties of drug culture may be discussed by those of you better qualified by experience than I am.

In conclusion, it may be said that considering the great natural resources in this country, which so far have been developed only to a limited extent, it is more than possible that a well-paying industry for producing chemicals and therapeutic remedies, including synthetic products could be established if the manufacturers were willing to spend the time and money necessary to do such work. As already stated an industry of this kind cannot be developed from today to tomorrow, a large amount of research work is necessary which naturally cannot give a fair profit to the invested capital in a short time. But one will soon find that many young men having heretofore considered their scientific work as finished when

leaving the university or college, will continue studying the new achievements in chemistry, because they will find out that in order to do extended research work such a course is absolutely necessary; these young men will also find that chemists with a thorough knowledge of all branches of chemistry can at all times command well-paying positions. Once this fact is realized there will be no lack of properly-trained men.

It is, therefore, incumbent upon the two closely related sciences, chemistry and pharmacy, and to the American capitalist to work hand in hand in order to establish an industry which will make us entirely independent of the European markets and which will preclude the possibilities of such conditions as existed after the outbreak of the European war and which still continue.

Such an industry would not only retain in this country much money which now goes abroad, but as already mentioned would place American chemistry and the ingenuity and education of American chemists upon a basis whereby scientific competition with the progressive European chemistry may be established.

DISCUSSIONS ON CHAIRMAN'S ADDRESS.

Dr. Turner: I think that Dr. Englehardt's address is a splendid one. He has covered the subject from several points of view and has summarized the condition as it exists today better than I have ever heard it presented anywhere else.

This address may be divided into three parts. The first in relation to the conditions of the chemical industry in this country. The second related to the chemical research laboratories of manufacturing houses which should be in a position to produce such compounds as are necessary for the chemical industries to manufacture. The third part was in relation to the schools, which should produce men who, in turn, should be able to work in these research laboratories.

Speaking relative to the first proposition, the condition of the chemical industry in this country is deplorable. It is due to a great many factors, and particularly I suppose it is due to the question of capital more than anything else. Chemical manufacturing involves a large amount of capital, particularly the organic part. It requires a large amount of capital invested in machinery, apparatus, and so on, as well as in laboratories which are necessary in connection with manufacturing. No capitalist is willing to invest his money unless he sees not only a safe return of his money, but also a future. As the condition exists today, there is absolutely no incentive for any capitalist to invest his money in chemical manufacturing. The conditions as they exist in Germany enable them to dump on this market the over-production, and the over-production enables the German manufacturer to reduce his cost of manufacture, and, through syndicates, maintain a price over there on a sufficiently high level. In order to overcome this condition, it seems to me we should stick closely to the recommendation which was made by the Committee which investigated the possibility of the manufacture of organic products in this country for the General Chemical Company. They made an exhaustive report and went closely into the question not only of various products which could be manufactured profitably in this country, but also in regard to the relation of wages as compared with this country, and so on. They recommended that the chemical manufacture in this country would be possibly under the condition that Congress pass a tariff which would be about 30 percent ad valorem and 7 cents per pound specific in addition. Under those conditions the chemical industry could exist in this country. There would be an incentive for the capitalists to invest their money.

I know from my personal experience that there are many capitalists ready to invest their money today. Even with the high price of benzoyl-ecgonine as it exists, there is sufficient return on the capital and business to enable the manufacturer to recoup himself before the war is terminated.

At the same time, most of these capitalists are very progressive men; they like to build; they don't like to start an industry today and get their money back tomorrow and then close the factory afterwards. They want to see a future for it. And the only way they can see a

future is by the government regulating the tariff in such a way that the production of chemicals in this country will insure to them a return in the future.

I would like to present a resolution from this section to be introduced before the General Session of the American Pharmaceutical Association, recommending that they bring before the proper authorities this view, that is, that Congress be urged to pass a tariff which would be based on those terms, that is, 30 per cent ad valorem and 7 cents per pound specific.

Now, in regard to the second part of Dr. Englehardt's address, that is, in regard to research laboratories, the conditions that exist in this country today, both in chemical and pharmaceutical particulars do not permit of the manufacture or the discovering in research laboratories of the same amount of synthetics as are discovered in Germany.

In the first place, in Germany the medical profession is very willing to co-operate not only with the chemical departments of universities, but with manufacturing houses as well, in investigating in clinics and hospitals the effects of various remedies produced in the laboratories, adopting those that are found good and rejecting those found wanting. It is very easy, and no one looks upon that phase of the question as below the dignity of a professor in a college of medicine; if you approach a man he will be glad to aid in this work of investigation. It is done very easily, and hence, whenever a new remedy is put on the market in Germany it has a great amount of clinical reports behind it.

In this country the manufacturer is compelled to go on the market with secret reports of those physicians who are willing to do the investigation work. It is next to impossible, if not impossible, to obtain any clinical reports which would be published in medical journals and which would be given to the medical profession as impartial evidence of the value of the new remedy.

Another condition which is of great value in Germany is that the college professors, and particularly the professors of chemistry, have a great deal of time to devote to work. Various compounds have been introduced which are the products of their work. It is also true that the manufacturing houses have done very valuable work.

But before we can speak of manufacturing and producing new synthetics, the conditions in this country will have to be changed greatly in the way of affording the college professors more time and enabling the students to devote more time to research. For this reason, I think the laboratories of research houses devote their time to physiological products rather than chemical. They do not require as much time.

But it is undoubtedly possible with the material at hand in this country to do research work. I have known many who received their education in this country who had the same ability as any foreign chemist had for research work.

I believe that is all I have to say on the subject of the President's address.

Dr. Asher: I did not hear the first part of the Chairman's address, but I was impressed with one phase of it that we will have to take up, and at the proper time I think we should pass a resolution.

What has been said regarding our condition is true, but there is one condition with which we are confronted that is more serious than all. That has to do with our patent laws. No matter what we do in this country today, no matter how proficient chemists or physiologists may be, it amounts to nothing unless there is a revision of our patent laws. The patent laws as they exist today are such that they do not offer any inducement for capital to engage in manufacturing.

There is one other point, and I am not saying it in criticism of Dr. Engelhardt's paper, but I want to quote or abstract some remarks made by Dr. Bonnerheise at the chemical meeting in New Orleans this last April. A great deal has been said in the newspapers against the American chemist. The chemical industries, the manufacturing people of this country, have looked upon the American chemist as a joke. I don't think that the American chemist is a joke. I have as much regard for the American chemist as I have for any chemist. Conditions are different in this country. There is more inducement for study and research abroad than in this country, but if we study the proposition in its proper light

it all comes down to a commercial basis. Why has not the chemical industry of this country made greater strides? It is because there is no opportunity here. It has been shown that the capitalist can make more money investing it in other channels than investing it in the line of chemical industry. Take the synthetics or the color industry as an example. There are 900 different colors on the market, each factory practically specializing in one particular color, and having an outcome for the by-products which in this country we could not have because most of those are covered by patents. He showed in his report of some of the stores—I will not mention the names—that they are selling more in the line of candy in one year than the profits from the chemical industry of Europe, and all down the line, so that the American capitalist is looking to that end where he will get the best results whether scientific or not. That is the real situation.

We could do more no doubt if our patent law was changed; so if I am in order, I would offer as a resolution, after this discussion is through, that we petition Congress to change the patent laws to afford the American chemist protection such as is afforded in Europe.

Dr. C. E. Caspari: One phase of this which has been touched on but about which something might be said, and that is the coal tar industry.

Dr. Engelhardt has referred to the fact that we send coal tar to Europe and it is shipped back here under different names, a part of it is used for increasing the value of illuminating gas, the light value. But a great percentage of it is used in making roads and roofing. Up to the present time it has been found more profitable to use it that way than to distil it and use the profits. No matter what our facilities in this country are or will be for manufacture, even if protected by a tariff, you cannot create in a year or five years or ten years the coal tar industry of Europe.

The coal tar industry is analogous to the packing house. The packing houses could not exist today if they didn't utilize every particle of a steer or of a hog. Their profits are really in the by-products; they are not in the meat itself. And so it is in the coal tar industry. After we obtain the various raw materials from coal tar by distillation, it then becomes necessary to manufacture these into other products. There will be certain by-products and a use must be found for those by-products to make the entire program profitable. And until we have devoted sufficient time in this country under the most favorable conditions to developing the industry as it has been done in Germany, we will never be able to compete with the German coal tar in this country.

Since the war began the scarcity of carbolic acid has been felt in this country. I know positively that carbolic acid is being made here now in large quantities and can be purchased in drums containing a thousand pounds or more. I know the concern that buys it from Mr. Edison in these quantities. I know that is another instance where because of lack of material coming from Germany a factory was compelled to manufacture its own material. So when the necessity arises I believe we will be able to meet the situation provided we have protection from Congress in the way of tariff.

Mr. Lichthardt: I will discuss another phase of the matter, and that is the production of crude drugs. We in California have been interested in that. Dr. Schneider is the pioneer in that line, and through my connections with the City of Sacramento, I have interested the school department, and they have taken up the propagation of crude drugs in the agricultural department of the city schools. The children are taking up the growing of belladonna, hyoscyamus and other drugs of vegetable origin, and I think that that is a very good way of starting such an industry in the United States. If we could find out just exactly what would grow in our locality, it would help us. I will admit that in the Sacramento Valley everything will grow, but it may not grow as well as it does in other parts of the United States. I haven't any doubt but that we can raise peppermint, and I know I have done some original work on digitalis. Belladonna, I think, would do pretty well there, but, nevertheless, the idea is worthy of being taken up throughout the United States, of trying to get the school children interested. They are willing to raise these drugs. And when they have raised them, let us, who know how to do research work, do it for the good of the community and analyze these drugs and see if they will compare with the European grown.

Dr. Schneider: I don't want to relate my experience in growing plants in California, because it is a very sad one. Some of the difficulties referred to by one or two of the speakers I have encountered also. To find money interests sufficient to start an enterprise of any kind is not an easy matter. In regard to the growing of belladonna, I will second the statement of Mr. Lichthardt of Sacramento that everything grows in California and grows very well. Mr. Lichthardt made the statement that some things grow better in other states. I don't agree with him. Nothing grows better than it does in California, belladonna included! We can grow here belladonna of very superior quality and can grow it profitably if we can use the stems. The manufacturers do use the stems. The content of California grown belladonna stem is equal to the leaf. I will not state my experience as I think I have done so at other meetings, but I will announce for the benefit of those present that I am now preparing a bulletin on the growing of belladonna which will be issued by the University of California Agricultural Department. Keep that in mind, and if you should be interested in growing belladonna, write for that bulletin, which will contain the details regarding the seeding and transplanting and cultivating and alkaloidal content and so forth. Nearly every drug plant, with the exception of purely tropical plants, can be grown profitably in the State of California and in other states, provided enough money is invested, and also provided enough energy is exerted to make the enterprise a success. That is all that is necessary, two things, money and effort. If those are forthcoming, it will be a success. Whether or not the government grants a tariff or a bounty, we know that a number of enterprises have been made a success, including the sugar beet industry of California, through the granting of a bounty. I have that in mind and I think it is an excellent idea. I know of no way to awaken interest better than that. Congress seems to take cognizance of those things of which it wishes to take cognizance, that is all there is to it.

Mr. Newcomb: Does the address contain any resolution?

Mr. Scoville: There have been two recommendations made.

Dr. Englehardt: Neither of them have been seconded.

Mr. Newcomb: Does the address contain any recommendations?

Dr. Englehardt: No.

Dr. Turner: I move the President's address be accepted and take the usual course.

(The motion was seconded, put and carried.)

Dr. Turner: In regard to the resolution, I would like to make it formal, that it be recommended to the House of Delegates and asked to be passed, as follows:

"In order to promote the chemical industry in this country, and particularly the manufacture of synthetic organic compounds necessary for medicinal purposes, a duty should be imposed on all compounds of that nature to the extent of 30 percent ad valorem and 7 cents per pound specific."

(The motion was seconded.)

Dr. Schneider: Mr. Chairman, while we are waiting, I wish to second the resolution which Dr. Asher is preparing now, namely, that our patent laws be properly revised.

Dr. Englehardt: While the resolution is being written down, we want to go ahead with the program, and I wish to appoint a committee to nominate officers for the coming year, and for that purpose I will appoint Dr. Schneider, repre-

senting the West, Dr. Caspari representing the Middle West, and Dr. Koch representing the East.

Is there any miscellaneous business? If not, we will proceed with the reading of the papers.

Dr. Asher: I have the resolution now:

"*Be it Resolved,* That, owing to the existing patent laws entailing a hardship on the chemical industry of this country, the Congress of the United States be requested to change the laws in keeping with those of foreign countries."

Dr. Englehardt: You have heard the resolution. What is your pleasure?

After some discussion, Dr. Turner moved as substitute, that a committee be appointed to look into the question of patent laws in this country as compared with patent laws in other countries, and to have a resolution passed for submission to Congress or to such other authority as may be found necessary.

After further remarks by other members, Mr. C. A. Mayo seconded the motion of Dr. Turner that a committee be appointed by the Section to study the question, and said this, of course, will be a committee of the Section. In the ordinary course, the action taken by the Section would be referred to the General Session, and there would be acted on with the full knowledge of the Committee on Patents and Trademarks.

The question was called for and adopted by vote. After consultation with the members the Chairman appointed a committee of four, consisting of Messrs. F. E. Stewart, Caspari, Asher and Turner.

Dr. Englehardt: Now there is the other motion of Dr. Turner which the Secretary will read.

Mr. Scoville (reading): "*Resolved,* That in order to promote the organic chemical industry in this country, and especially the manufacture of organic synthetic products used in the practice of medicine, a duty should be imposed on all such products, as well as the raw material entering into the composition of such, to the extent of 30 percent ad valorem and 7 cents per pound specific. It is further

Resolved, That the Congress of the United States be petitioned to enact legislation to this effect."

Dr. Englehardt: You have heard the resolution. Is there any discussion?

(The question on the resolution was put and carried.)

Dr. Englehardt: We will proceed with the reading of the papers. The next paper on the program is a paper by Prof. Scoville on Tinctures.

After discussion the paper was referred for publication.

The other papers read at this session are as follows:

The Increase of Acidity of Hydrogen Peroxide on Standing—By C. F. Ramsay and A. M. Clover.

The Retarding Effect of Certain Substances on Pepsin Digestion—By C. F. Ramsey.

Standardization of Colors—By H. V. Arny.

Hydrolysis of Some of the Common Vegetable Oils—By W. F. Rudd.

History of the Discovery of Alkaloidal Affinities of Hydrous Aluminum Silicate—By J. U. Lloyd.

These papers after discussion were referred for publication. The discussions will accompany the papers when printed in the Journal.

Dr. Caspari: Mr. Chairman, this Section will have two more sessions, one tomorrow afternoon and one Thursday morning, and this room is to be used at 5 o'clock by another organization, and it is pretty near that now.

Dr. Englehardt: Then a motion to adjourn is in order. But before we adjourn I would like to ask the Nominating Committee whether they are ready to report.

Dr. Caspari: The Nominating Committee is ready to report. We beg leave to submit the following nominees: For Chairman, W. L. Scoville, H. V. Arny; First Vice Chairman, L. A. Brown, C. W. Johnson; Second Vice President, Joseph L. Turner, A. Thurston; Secretary, E. L. Newcomb, William Mansfield.

Dr. Englehardt: Then a motion to adjourn is in order.

(It was moved, seconded and carried that the meeting adjourn.)

(Adjourned.)

SCIENCE AS A BALANCE WHEEL.

Thinking and doing are for the time out of balance. Science has the power to restore and maintain the balance by breathing more of its spirit into practical life, and if an instrument to guide this work is needed—if it is right for men of science to have a confession of faith—I know of none more inspiring than the words that Huxley used in defining his own life purpose. To promote the increase of natural knowledge and to forward the application of scientific methods of investigation to all the problems of life to the best of my ability, in the conviction which has grown with my growth and strengthened with my strength, that there is no alleviation for the sufferings of mankind except veracity of thought and of action, and the resolute facing of the world as it is when the garment of make-believe by which pious hands have hidden its uglier features is stripped off.—*Ross G. Harrison, Science.*

REPORT OF COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, Geo. M. Beringer, 501 Federal St., Camden, N. J.

FERRI PYROPHOSPHAS SOLUBILIS

Soluble Ferric Pyrophosphate

It should contain Ferric Pyrophosphate corresponding in amount to not less than 10 percent of iron (Fe=55.84). It should be kept in amber-colored, well-stoppered bottles, protected from light.

Soluble Ferric Pyrophosphate occurs in thin, apple-green transparent scales, without odor, and having an acidulous, slightly saline taste. The salt is permanent in dry air, when excluded from light, but when unprotected, soon becomes discolored.

Soluble Ferric Pyrophosphate is freely and completely soluble in water, insoluble in alcohol. An aqueous solution of the salt shows a slightly acid reaction with litmus.

Soluble Ferric Pyrophosphate when boiled with potassium hydroxide T. S., should produce a brownish-red precipitate without evolving ammonia.

Fuse 0.1 Gm. of the salt with 0.1 Gm. each of potassium nitrate and sodium carbonate, and boil the residue with 10 mils of distilled water and filter. The filtrate, after being rendered nearly, but not quite, neutral with dilute nitric acid, should yield a yellow precipitate upon the addition of silver nitrate T. S.

Boil 5 mils of an aqueous solution of the Salt (1 in 10) with an excess of potassium hydroxide T. S., until the iron is entirely precipitated and filter; on acidulating the filtrate with acetic acid and adding silver nitrate T. S. the precipitate produced is pure white and not yellow (*Orthophosphate.*)

Assay—Weigh accurately about 1 Gm. of Soluble Ferric Pyrophosphate, dissolve it in 25 mils of distilled water in a glass stoppered bottle, add 15 mils of hydrochloric acid and 2 Gm. of potassium iodide, securely stopper the bottle and keep it at a temperature of 40° C. for 30 minutes. When cooled and then titrated with tenth-normal sodium thiosulphate V. S., using starch T. S. as indicator, it should show not less than 10 percent of iron. Each mil of tenth-normal sodium thiosulphate V. S. used corresponds to 0.005584 Gm. of Iron (Fe).

Each gramme of Soluble Ferric Pyrophosphate, U. S. P., corresponds to at least 17.908 mils of tenth-normal sodium thiosulphate V. S.

Average dose.—0.25 Gm. (4 grains).

FICUS

Fig.

The partially dried fruit of *Ficus Carica* Linné (Fam. *Moraceae*).

Usually compressed, of irregular rounded shapes, 2.5 Cm. to 5 Cm. in diameter, fleshy, light brown to yellow, frequently with an efflorescence of sugar; apex with a small scaly orifice; base with a scar or short stalk; internally hollow, with numerous small, brownish-yellow, glossy and hard akenes; odor distinct, fruity; taste sweet, pleasant.

GALEGA

Galega. European Goats Rue.

The dried flowering tops of *Galega officinalis* Linné (Fam. *Leguminosae*).

Stem smooth, erect, branched, when entire 15 to 45 cm. long, commonly cut and broken; leaves oddly-pinnate with 6-8 pairs of leaflets; stipule lanceolate, sagitate on one side; leaflets bright green, smooth or slightly hairy, short petioled, lanceolate or ovate-lanceolate, obtuse, slightly mucronate, 2 to 5 cm. long, 2 to 6 mm. broad; flowers small, white

to violet, in axillary racemes. Odor indistinct; taste mucilaginous, slightly bitter and astringent; colors the saliva yellowish-green.

GERANIUM

Geranium. Cranesbill.

The dried rhizome of *Geranium maculatum* Linné (Fam. *Geraniaceae*.)

Of horizontal growth, cylindraceous, somewhat flattened and rather sharply tuberculated, 2.5 to 10 Cm. long and 3 to 15 Mm. in diameter; longitudinally wrinkled, dark brown; facture short, light reddish brown or purplish; bark thin; wood indistinct; central pith large; odor slight; taste strongly astringent.

Average dose.—1 Gm. (15 grains).

GOSSYPII CORTEX

Cotton Root Bark.

The recently-gathered dried bark of the root of one or more of the cultivated varieties of *Gossypium herbaceum* Linné, or *Gossypim barbadense* Linné, or *Gossypium arboreum* Linné (Fam. *Malvaceae*) without admixture of more than 5 percent of wood and other foreign material.

In flexible bands or quilled pieces, attaining a length of 30 cm. and a thickness of about 1 mm.; outer surface orange-brown, smooth, slightly wrinkled, with small circular lenticels, the outer corky layer frequently exfoliated and showing the more or less fissured and fibrous middle bark; inner surface light brown, longitudinally striate; fracture tough, fibrous, the inner bark readily separable into fibrous layers; odor slight; taste very slightly acrid.

Under the microscope, sections of Cotton Root Bark show an outer layer of cork composed of 4 to 6 layers of tabular thin-walled cells, yellowish-brown, non-lignified cells, a thin primary cortex, consisting of starch-bearing parenchyma and an occasional large secretion reservoir with yellowish-brown contents; inner bark with large groups of bast-fibers arranged in interrupted, successive, concentric circles, separated radially by medullary rays and tangentially by the leptome or sieve tissue; bast-fibers 0.300 to 1.000 mm. in length, 0.015 mm. in width, the walls being 0.005 mm. in thickness, strongly lignified and with very few pores, the ends being acute and markedly attenuate; medullary rays 1 to 6 cells wide, the cells usually filled with starch grains; in diameter, the latter from 0.003 to 0.020 mm.; occasional cells containing rosette aggregates of calcium oxalate 0.009 to 0.025 mm. in diameter.

Average dose.—2 Gm. (30 grains).

HAEMATOXYLON

Haematoxylon. Logwood

The heart-wood of *Haematoxylon campachianum* Linné (Fam. *Leguminosae*).

Usually in small chips, reddish-brown, the freshly cut surface dark yellowish-red, on transverse section the wood shows medullary rays which are four cells wide; odor faint, agreeable; taste sweetish, astringent.

Hematoxylon imparts to water containing a little acid a yellowish color, which is changed to purple or violet-red by alkalies.

When the surface has a greenish, metallic lustre, the wood has undergone fermentation and should be rejected.

HAMAMELIDIS FOLIA

Hamamelis Leaves. Witchhazel Leaves.

The dried leaves of *Hamamelis virginiana* Linné (Fam. *Hamamelidaceae*), collected in autumn before the flowering of the plants, without admixture of more than 10 percent of stems and other foreign matter.

Petiole 1 to 1.5 cm. in length; lamina, when entire broadly elliptical or rhomboid-ovate, usually inequilateral, mostly 8 to 12 cm. in length; apex usually acute, sometimes rounded or acuminate; base slightly heart-shaped and oblique; margins sinuate or sinuate-dentate; upper surfaces pale or brownish-green, occasionally dark brown, with a few stiff, straight hairs; lower surfaces lighter in color, somewhat hairy, midrib and veins prominent; odor slight; taste astringent, slightly aromatic and bitter.

Under the microscope, sections of Hamamelis leaves show upon the lower surface narrow elliptical stomata, 0.015 mm. in length and with 2 to 4 neighboring cells; from both surfaces, but especially from the under surface, arise stellate hairs composed of 4 to 12 cells united at the base, the individual cells being 0.020 to 0.075 mm. in length, either straight or more or less bent and with very thick walls and narrow lumina, the latter sometimes only apparent in the lower portion of the cells

Transverse sections show, in addition to the epidermal layers, a palisade layer consisting of a single row of cells and a dorsal pneumatic tissue made up of 3 to 6 rows of strongly branching cells; large collateral fibro-vascular bundles occur in the mid-rib and petiole, the tracheae being narrow, mostly spiral and associated with numerous, narrow, strongly lignified and porous wood-fibers; around the phloem, occurs a nearly continuous circle of bast-fibers, possessing strongly lignified walls; calcium oxalate in monoclinic prisms, 0.010 to 0.035 mm. in diameter, either in the cells of the mesophyll or in crystal-fibers associated with the bast-fibers.

HELIANTHEMUM

Helianthemum

Rock-rose. Frost-weed.

The dried herbage of *Helianthemum Canadense* (Linné) Michaux (Fam. *Cistaceae.*)

Stems mostly less than 5 dm. long, branched above, terete, frequently reddish, canescent, the slender branches mostly erect; leaves very short-petioled, 1 to 3 cm. long, 4 to 8 mm. wide, oblong to oblanceolate, with entire, revolute margins, green and roughish on the upper surface, canescent underneath; flowers of two kinds, rarely present at the same time, early ones mostly solitary, pedicelled, 2 or 3 cm. broad, with bright yellow corolla, hairy calyx, about 30 stamens and a single 3-carpelled pistil, producing an ovoid capsule, about 7 mm. long; later flowers apetalous, clustered in the leaf-axils, nearly sessile, having but 4 stamens and producing a capsule about 4 mm. long; taste lightly aromatic, astringent and bitter.

IGNATIA.

Ignatia.

Saint Ignatius Bean. Ignatia amara.

The dried seed of *Strychnos Ignatii* Bergius (Fam. *Loganiaceae*), yielding, when assayed by the process given below, not less than 2.5 percent of the mixed alkaloids of Ignatia. Heavy, hard, angularly ovate with obtuse angles, about 20 to 30 mm. long, by 15 mm. broad and thick; externally grayish or reddish-black and nearly smooth; fracture granular and translucent in small fragments; a small irregular cavity in the center; nearly inodorous; taste intensely bitter.

The yield of ash does not exceed 4 percent.

Assay—To 15 Gm. of Ignatia, in No. 60 powder, contained in a 300 mils Erlenmeyer flask, add 150 mils of a mixture of ether two volumes and one volume of chloroform; stopper the flask, shake thoroughly and allow to stand for 10 minutes. Then add 15 mils of ammonia water and 15 mils of distilled water, stopper the flask tightly and shake it vigorously at frequent intervals during 12 hours. Allow the dregs to settle and decant 100 mils of the clear liquid (representing 10 Gm. of the drug). Filter the solution through a pledget of purified cotton into a separator and rinse the graduate with a little ether and pour this through the cotton. Completely extract the alkaloids from the solution by shaking it out repeatedly with successive portions of weak sulphuric acid, (1-20). Collect the acid washings in a second separator, add ammonia water until the solution is decidedly alkaline to litmus and completely extract the alkaloids by shaking out with successive portions of chloroform. Evaporate the combined chloroform washings to dryness, add 5 mils of ether to the residue and again evaporate it to dryness. Dissolve the residue in exactly 10 mils of tenth-normal sulphuric acid, V. S., aided by gently warming, if necessary, and titrate the excess of acid with fiftieth-normal potassium hydroxide V. S., using cochineal T. S. as indicator.

Each milliliter of tenth-normal sulphuric acid V. S. consumed, corresponds to 0.0364 of the total alkaloids of Ignatia.

KAOLINUM

Kaolin

A native hydrated aluminum silicate, powdered and freed from gritty particles by elutriation.

A soft, white or yellowish-white powder, or in lumps, having an earthy or clay-like taste; insoluble in water, and in cold dilute acids and solutions of the alkali hydroxides.

When moistened with water, Kaolin assumes a darker color and develops a marked clay-like odor.

If 1 Gm. of Kaolin be mixed with 10 mils of water and 5 mils of sulphuric acid, no efferescence should occur, and if the mixture be evaporated until the excess of water has been removed, and further heated until dense white fumes of sulphuric acid anhy-

dride appear, then cooled and 20 mils of water added and boiled for a few minutes and filtered, there should remain on the filter a gray insoluble residue of *impure silica.*

If to one-half of the above filtrate ammonia water be added, a gelatinous precipitate of *aluminum hydroxide,* insoluble in excess, should be obtained.

If to the remaining half of this filtrate, sodium hydroxide T. S. be added, it should yield a gelatinous precipitate which is almost or completely soluble in an excess of the reagent.

If 2 Gm. of Kaolin be rubbed in a mortar with 10 mils of water, the mixture should not acquire more than a slight reddish tint on the addition of 0.05 Gm. of sodium salicylate (absence of more than traces of *iron*).

If Kaolin be ignited at a red heat, it should leave not less than 85 percent of nonvolatile residue.

KRAMERIA

Krameria. Rhatany.

The dried root of *Krameria triandra* Ruiz and Pavon, known in commerce as Peruvian Rhatany, or of *Krameria Ixina* Linné, known in commerce as Savanilla Rhatany, or *Krameria argentea* Martius, known in commerce as Para or Brazilian Rhatany (Fam. *Leguminosae*), without admixture of more than 5 percent of stems and other foreign matter.

Peruvian Rhatany—It consists of a knotty, several to many-headed crown with numerous branching roots, the latter rarely attaining a length of 50 cm. and usually less than 1 cm. in thickness, cylindrical, somewhat tapering, flexuous or wavy and very flexible, externally light reddish-brown or brownish-red, more or less marked with dark scaly cork, especially in the upper portion, otherwise nearly smooth, somewhat longitudinally wrinkled and devoid of transverse fissures, fracture of bark slightly fibrous, of wood tough and splintery, the pinkish-brown bark less than one-third of the radius, the wood yellowish or pinkish-white and finely radiate; modorous; wood nearly tasteless, bark astringent

Savanilla Rhatany and Para Rhatany—Roots usually separate, less flexuous and tapering than those of Peruvian Rhatany, and usually not exceeding 12 mm. in thickness; externally purplish-brown or chocolate-brown and marked with numerous fissures; fracture less tough than that of Peruvian Rhatany, internally the bark and wood darker, the bark about two-fifths or more of the radius and more astringent than that of Peruvian Rhatany.

Powder—Reddish-brown; starch grains, single or 2- to 4-compound, the individual grains spherical, ellipsoidal, or plano-convex, and sometimes with a central, radial or star-like cleft, 0.003 to 0.035 mm. in diameter; bast-fibers more or less wavy in outline with very much attenuated ends and with non-lignified walls, tracheae with simple or bordered pores associated with numerous wood fibers which are narrow-spindle shaped and with thick, porous, slightly lignified walls; numerous cellular fragments with yellowish or reddish brown walls; calcium oxalate in monoclinic prisms, 0.010 to 0.100 mm. in length, few or frequently absent.

Macerate 2 Gm. of powdered Rhatany with 10 mils of alcohol, with occasional stirring for one hour and filter. The deep reddish colored filtrate obtained should yield a dark brownish-red precipitate and a deep orange-red filtrate upon the addition of an excess of alcoholic lead acetate T. S.; this latter filtrate should yield no precipitate upon the further addition of a drop or two of alcoholic lead acetate T. S., and should give an olive-brown solution having a purplish fluorescence upon the addition of a drop or two of ferric chloride T. S.

The yield of aqueous extract should be not less than 9 percent.

The yield of ash should not exceed 5 percent.

Average dose.—1 Gm. (15 grains).

LAPPA

Lappa. Burdock Root.

The dried root of *Arctium Lappa* Linné, or of other species of *Arctium* (Fam. *Compositae*), collected from plants of the first year's growth.

Nearly simple, fusiform, of variable length, 5 to 20 Mm. in diameter near the crown; frequently split or in broken pieces; externally grayish-brown, longitudinally wrinkled, the crown somewhat annulate, sometimes surmounted by a woolly tuft of leaf remains; fracture somewhat horny; a dark cambium separating the thick brownish

bark from the yellowish porous and radiate wood, centrally hollow or containing a white pith-like tissue; odor slight; taste mucilaginous, sweetish, and slightly bitter.

Average dose.—2 Gm. (30 grains).

LEPTANDRA

Leptandra. Culver's Root.

The dried rhizome and roots of *Veronica virginica* Linné (Fam. *Scrophulariaceae*) without admixture of more than 5 percent of stems and other foreign matter.

Rhizome usually of horizontal growth, nearly cylindrical, somewhat branched, 4 to 10 cm. in length and 4 to 13 mm. in diameter; branches readily separable from the main rhizome; externally grayish-brown to dark reddish-brown, annulate from circular scars of bud-scales, upper surface with short stem remnants; occasionally with buds, and numerous circular stem-scars; from the under and lateral portions arise numerous coarse roots; fracture very tough and woody; internally bark rather thin, dark brown and resinous, wood about the same thickness as the bark, light brown and porous, pith large, more or less hollow the color being similar to that of the bark; nearly odorless; taste very bitter and acrid.

Roots 1 to 10 cm. in length and 1 to 2 mm. in diameter; externally dark brown to purplish brown, smooth and faintly longitudinally wrinkled; fracture short; internally with a thick brownish-black bark and small light brown central cylinder.

Powder.—Dark brown and yellowish-white; odor strong, penetrating; consisting of numerous irregular fragments, many of them being colored pink or violet upon the addition of hydrated chloral T. S.; starch grains numerous, to some extent isolated but mostly in the parenchymatous cells, the individual grains being nearly spherical or more or less polygonal, and from 0.002 to 0.008 mm. in diameter; fragments of woody tissues with tracheae and wood-fibers; tracheae with spiral thickenings or with simple or bordered pores, wood-fibers with thick lignified walls, with simple pores or with bordered pores, resembling tracheids; fragments of parenchyma containing a light brown or brownish-black resin, the latter frequently closely coherent with the starch grains in the cells thus preventing the separation of the individual starch grains; in hydrated chloral T. S. mounts, occasional elongated cells with a lemon-yellow oily substance.

LUPULINUM

Lupulin.

The glandular trichomes separated from the strobiles of *Humulus Lupulus* Linne (Fam. *Moraceae*).

A granular powder, bright yellowish-brown having the characteristic odor and taste of hops; on aging, becoming darker in color, disagreeable and valerian-like in odor, when it is unfit for use. Lupulin should be kept in tightly-closed containers protected from light.

Under the microscope, the glandular trichomes are somewhat globular or ellipsoidal, 0.150 to 0.200 mm. in diameter, consisting of a single layer of secreting cells assuming the form of a shallow cup, from the inner surface of which the cuticle has been separated by the secreted yellowish-brown oleo-resin.

Not less than 60 per cent of Lupulin should be soluble in ether.

The yield of ash should not exceed 16 percent.

MANGANI ET SODII CITRAS

Maganese and Sodium Citrate

Soluble Manganese Citrate.

Manganous citrate made soluble by sodium citrate. It contains, when rendered anhydrous by drying at 120° C. to constant weight, from 49 to 51 percent of manganous citrate. [$Mn_3(C_6H_5O_7)_2$=542.87.]

Manganese and Sodium Citrate occurs as a yellowish or pinkish white powder, or as translucent scales; odorless; having a slightly bitter and astringent taste. Permanent in the air.

It is slowly soluble in about four parts of water, slightly more soluble in boiling water, nearly insoluble in alcohol.

An aqueous solution of the salt is neutral or slightly alkaline to litmus, but does not redden phenolphthalein T. S.

When strongly heated, the salt chars and finally leaves a residue which effervesces with acids and imparts an intensely yellow color to a non-luminous flame.

An aqueous solution of the salt (1-20) made alkaline with ammonia water yields on warming with ammonium sulphide T. S., a salmon colored precipitate.

Ten mils of the aqueous solution of the

salt (1-20), slightly acidulated with acetic acid and mixed with 2 mils of calcium chloride T. S., remains clear while cold, but yields a white crystalline precipitate when heated to boiling.

Ten mils of the aqueous solution of the salt (1-50) does not respond to the U. S. P. test for *heavy metals*.

Separate portions of 10 mils each of an aqueous solution (1-100) answer the following requirements: Acidulated with hydrochloric acid it is not more than slightly reddened by potassium sulphocyanate T. S. (*iron*); nor rendered turbid at once by barium chloride T. S. (*sulphate*); nor show more than an opalescence with silver nitrate T. S. when acidulated with nitric acid (*chloride*).

Mix about 0.5 gm. of the salt with 5 mils. of sulphuric acid in a porcelain dish previously rinsed with sulphuric acid, protect the mixture from dust, and heat it for 15 minutes on a waterbath. No color darker than yellow develops (*Tartrates or other readily carbonizable substances*).

Assay—Weigh accurately about 0.5 gm. of the salt, previously dried to contsant weight at 120° C., dissolve it in 100 mils of distilled water, add 50 mils of hydrogen dioxide solution, and 10 mils of ammonia water, and boil the mixture for several minutes. Collect the precipitate on a filter, wash it thoroughly with hot distilled water, dry and ignite to constant weight. The weight of the manganous-manganic oxide (Mn_3O_4) thus obtained, is not less than 20.65, nor more than 21.1 percent of the weight of the salt taken, corresponding to not less than 49, nor more than 51 percent of manganous citrate.

MANGANI HYPOPHOSPHIS.

Manganese Hypophosphite.

It should contain not less than 97 percent of hydrated manganese hypophosphate [$Mn(PH_2O_2)_2 + H_2O = 203.06$]. It should be kept in well-stoppered vials.

Manganese Hypophosphite is a pink, granular or crystalline powder, odorless, and nearly tasteless, permanent in the air.

It is freely soluble in water; insoluble in alcohol.

An aqueous solution of the salt (1 in 20) shows a neutral or acid reaction with litmus, and yields with ammonium sulphide T. S. a salmon-colored precipitate of manganese sulphide, soluble in acetic acid.

When strongly heated in a dry test-tube, the salt evolves spontaneously inflammable hydrogen phosphide and on complete ignition leaves a residue of manganous pyrophosphate.

When an aqueous solution of the salt (1 in 20) acidulated with hydrochloric acid is added drop by drop with agitation to an excess of mercuric chloride T. S., a white precipitate of mercurous chloride is formed, and, upon the further addition of the solution of Manganese Hypophosphite, the precipitate becomes gray from reduction to metallic mercury.

On adding about 0.5 gm. of the salt to 5 mils of acetic acid it should produce no effervescence (*carbonate*).

On boiling 0.25 gm. of the salt with 10 mils of potassium hydroxide T. S. it will produce a light salmon-colored precipitate which gradually acquires a brown color on exposure to the air. The filtrate from this mixture, after being slightly acidulated with hydrochloric acid and boiling for a minute and then rendered alkaline with ammonia water, should yield no precipitate upon the addition of magnesia mixture T. S. (*phosphate*).

Dissolve 1 gm. of the salt in 20 mils of diluted hydrochloric acid with the aid of heat and then add 1 mil of barium chloride T. S. Not more than a slight turbidity should be produced (*sulphate*).

Dissolve 0.5 gm. of Manganese Hypophosphite in 10 mils of hot distilled water, add 10 mils of solution of hydrogen dioxide and 10 mils of potassium hydroxide T. S., boil for a minute, then make slightly acid with acetic acid and again warm. Cool, filter, and to 10 mils of the filtrate add 1 mil of ammonium oxalate T. S. No turbidity should be produced within five minutes (*calcium*).

Pour 5 mils of an aqueous solution of the salt (1 in 30) into an evaporating dish containing 3 mils of nitric acid, dilute with about 10 mils of distilled water and evaporate to dryness on a water-bath. The residue should not respond to the U. S. P. test for *arsenic*.

Assay—Weigh accurately about 1 gm. of Manganese Hypophosphite, and dissolve it in 30 mils of boiling distilled water in a 250 mil graduated flask. Add 25 mils of solution of hydrogen dioxide and 15 mils of potassium hydroxide T. S. and heat for ten minutes on a water-bath with frequent agitation. Cool,

add distilled water to make the volume exactly 250 mils, mix well and filter through a dry filter. Evaporate 25 mils of the clear filtrate to dryness with 10 mils of nitric acid, dissolve the residue in 10 mils of distilled water, transfer it to a 100 mil flask with the aid of a few mils of distilled water, add a drop of phenolphthalein T. S. and sufficient potassium hydroxide T. S. (free from chloride) to produce a pink color, then add 50 mils of tenth-normal silver nitrate V. S. and proceed from this point as directed in the assay under *Sodii Phosphas,* U. S. P.

When calculated to the amount originally taken it should show not less than 97 percent of Manganese Hypophosphite.

Each milliliter of tenth-normal silver nitrate V. S. used, corresponds to 0.003384 gm. of hydrated Manganese Hypophosphite $Mn(PH_2O_2)_2+H_2O$.

Each gramme of Manganese Hypophosphite corresponds to at least 286.64 milliliters of tenth-normal silver nitrate V. S.

MASTICHE

Mastic

A concrete resinous exudation from *Pistacia Lentiscus* Linne (Fam. *Anacardiaceae*).

In subglobular, lenticular, elongated or pear-shaped tears, about 3 mm. in diameter, pale yellow or greenish-yellow, transparent, having a glass-like lustre, the surface sometimes very slightly dusty; brittle, becoming plastic when chewed; odor slight, balsamic; taste mild, terebinthinate.

Mastic is completely soluble in ether and almost completely soluble in alcohol. The acid number determined by the method of the U. S. P. should not be less than 65.

MELILOTUS

Melilot. Yellow Sweet Clover

The dried leaves and flowering tops of *Melilotus officinalis* (Linne) Lamarck (Fam. *Papilionaceae*).

Stems mostly less than 3 dm. long, slender, straight, mostly simple, often leafy below, terminating in long, slender racemes, the younger portions very finely pubescent; leaves glabrous or nearly so, petiolate, trifoliolate, stipulate, the stipules subulate, entire, the leaflets 1 to 3 cm. long, varying from narrowly oblong to oval or occasionally broader above the middle, rounded truncate or slightly notched at the summit, sharply serrate; racemes 1 dm. or less long, many flowered; the flowers yellow, 5 or 6 mm. long, calyx bell-shaped, the 5 nearly equal lobes shorter than the tube, corolla papilionaceous, the keel shorter than the other petals, which are about equal; legumes reflexed, about 4 mm. long, obovate, wrinkled, 1-seeded; odor strong, vanilla like; taste sweetish, peculiar, slightly pungent and bitter.

The yield of ash should not exceed 10 percent.

The most important agricultural fertilizer—sodium nitrate—has been obtained for a great many years from the nitrate beds in Chile. These beds are now almost exhausted, and for a time persons interested in agriculture felt considerable anxiety about the future supply of this fertilizer. It has long been known that the electric arc burning in a mixture of nitrogen and oxygen such as we find in the case of air, will cause the two gases to unite chemically. The heat of the arc, however, is so great as to cause the two gases to separate again. It was found later that if the distance between the carbons of the arc is increased and the arc drawn aside and attenuated by means of a magnet, the gases will not be separated after combination. This discovery was followed in several countries of Europe, notably Sweden, Norway, Italy, and others where there is good water power, by the establishment of great plants for the manufacture of commercial fertilizers from the air. It has doubtless occurred to many persons that this abstraction of nitrogen might ultimately render the air unfit for breathing. The worry on this account, however, may be dismissed when we learn that the air above each square mile of the earth's surface contains nearly 24 million tons of nitrogen.—*Ambition.*

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

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THE FILLING OF AMPOULES.

Herbert Skinner, in the Pharamceutical Journal and Pharmacist, describes his method for filling ampoules, which may be adopted in any pharmacy.

The ampoules are boiled in distilled water twice, of course using fresh water each time. He suggests that a supply of ampoules after the second boiling should be kept filled with distilled water, ready for an emergency order. The apparatus for filling is constructed as follows: No. 1, an Erlenmeyer flask of 125 mils is fitted with a rubber stopper, having two perforations; through one is inserted an ordinary glass canula, through the other is passed a piece of glass tubing to the bottom of the flask and projecting about one inch above the stopper. A piece of thick-walled rubber tubing is slipped over the end. Attached to the canula is a single bulb bellows, of which the valve end has been blocked to prevent ingress of air. The whole is fixed on a retort stand over a spirit lamp. This serves for filling Ophthalmic ampoules.



For the bottle style, replace the small piece of thick-walled rubber tubing by a piece about seven inches long, and in the end insert a piece of nickel tube, two inches long, with a bore about that of an ordinary exploring needle. In filling, the ampoule mouth is inserted over the nickel piece and pulled over, so that the rubber tubing forms a half circle; pressure is applied to the bulb; then with the left hand withdraw the ampoule and release the pressure with the right. This will clear the mouth of the ampoule and enables sealing to be done without risk of fracture to the neck.

A second piece of apparatus is described for removing traces of water and consists of a single bellows bulb with the end blocked as before and a nickel piece fitted into the tube, which is attached horizontally to the upright of the retort stand; the mouth of the ampoule is pushed over the nickel tube and sufficient pressure exerted on the bellows to blow out the water.



After sealing, the ampoules should be ster-

ilized for half an hour at 80° C. Mr. Skinner states that for this purpose they use a wire basket which replaces the dish in the water-bath, a cover is placed over it to keep in the steam. Sterilization will soon show whether the ampoules have been properly sealed or not.

Mr. Skinner concludes by saying that he has tried many methods, automatic and otherwise, but this system is preferred by him.

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WHAT IS A DRACHM?

We are glad to publish the following comment by Mr. M. I. Wilbert on the editorial under above caption in the August issue.

Our intention was not to do Dr. Alsberg an injustice, but simply followed the lines of the paper presented at the meeting of the Pennsylvania Pharmaceutical Association. We were not aware that manufacturers had made use of a term, practically obsolete, in order to create an impression of greater weight. We still contend that it is an easy matter to do away with several of the values given to the term referred to. We maintain that it would be advantageous to have only one "dram" and that the value of it be sixty grains, to be designated as the English translation of the Latin, drachma.

We thank Mr. Wilbert for his communication, which follows:

"I had intended to call your attention before to the editorial in the August number of the Journal of the American Pharmaceutical Association, headed, "What is a Drachm?" As I read this editorial it is not quite fair to the Chief of the Bureau of Chemistry. It would appear to intimate that the promulgation of the ruling that a dram is to be considered as the sixteenth part of an avoirdupois ounce is an arbitrary decision on the part of Dr. Alsberg, the Chief of the Bureau of Chemistry, whereas in fact it is nothing more than a recognition of existing law and the legality of practices that are admittedly designed to mislead. Unfortunately, perhaps, the weights and measures amendment to the Food and Drugs Act specifies that the weight of an article must be given in avoirdupois pounds or fractions thereof, or in the metric system. Now it appears that many years ago, when the avoirdupois pound was recognized by law as the official standard, the recognition involved all of the fractions of the pound then in use in England. The avoirdupois dram never even excited academic interest in this country until after the adoption of the weights and measures amendment to the Food and Drugs Act, when some clever or well-posted manufacturer discovered that seven drams would look infinitely more impressive than one-half ounce. This practice was early adopted by several manufacturers and when investigated by the Bureau of Chemistry it was found that the people using the word "dram" has ample authority at law for doing so and the ruling referred to was published primarily as a warning or as information that the practice of misleading purchasers by the use of the word "dram" was spreading rather rapidly. The only thing that pharmacists can do and should do is to differeniate between the Pharmacopœial or apothecaries' "drachm" and the avoirdupois "dram" so as to establish the difference between them. Further than this you may be interested in the fact that this controversy over dram and drachm is developing an interest in the metric system and some manufacturers, at least, have adopted the metric system for stating the weight of materials contained in a given package. M. I. Wilbert."

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COLOR VARIATION AND PRECIPITATION IN TINCTURE OF NUX VOMICA SOMETIMES DUE TO AMMONIA.

Thomas Latham has communicated the following:

F. W. Nitardy in July issue of the Journal of the A. Ph. A., mentions variation of color in tincture of nux vomica from a rich brown made with U. S. P. extract, to straw color when made by diluting fluidextract.

The most recent powdered extract does not give a rich brown but a color nearly that which Mr. Nitardy takes exceptions to. Improvement in vacuum apparatus has enabled manufacturers to produce a light gray extract, whereas formerly it was a coffee brown. The caramelization would naturally reduce the alkaloid content and be a financial loss, as it is necessary to bring the extract up to U. S. P. strychnine standard. Observing precipitation in a batch of tincture made with the newer extract, I conferred with the manufacturer whose chemist suggested that it was due to the ammonia present in the air of the filtering room and that the addition of nitro-hydrochloric acid would re-dissolve the precipitate. This accidental contamination doubtless lead Kennedy (American Journal of Pharmacy) to conclude that ammonia was found in the tincture per se as he found strychnine in the precipitate. I have found 1 to 500 of the acid sufficient to clear the tincture, when a slight precipitate is found upon standing two or three weeks.

DR. PAUL EHRLICH.

The rank of Dr. Paul Ehrlich will be undisputed by physicians and the laity, and pharmacy willingly accords him honor for establishing chemotherapy.

The side chain theory offers an explanation of the chemical production of antitoxins, and hence the phenomena of immunity to disease.

Ehrlich discovered the parasite "spirochaete pallida" while experimenting with dyestuff on the different tissues of the body and after many failures, indicated by the number given to Salvarsan, found the specific which, even without his many other discoveries, entitles him to highest distinction.

Dr. Ehrlich died August 20 at the age of sixty; as we count time, a comparatively short life, but in achievement and usefulness his months had the value of years. E. G. E.

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DR. CHARLES J. FINLAY.

Pharmacy honors the memory of Dr. Charles J. Finlay, and the United States and the world have profited, in conservation of life and time, by values that cannot be estimated. Others of course contributed by sacrifice and application to the potential discovery of the transmission of yellow fever, but the demonstration of Dr. Findlay's theory vanquished the "terror of the tropics" and connected the "great oceans."

Dr. Finlay, aged 81, accompanied Dr. Ehrlich, August 20, to the place of rest, from where we hope they may observe the results of their labors and fortunate discoveries and be gratified by the world's beneficial application of them. E. G. E.

Necrology

JOHN ROEMER.

John Roemer, President of the New York Branch of the American Pharmaceutical Association, was born in New York in 1873 and died in the White Plains Hospital, White Plains, N. Y., on August 20, 1915, following an operation for gall-stones.

Mr. Roemer received his early education in the public schools of New York and was graduated from the New York College of Pharmacy on reaching his majority. After taking a post graduate course in Columbia University, he engaged in the practice of pharmacy in New York for six years. He then removed to White Plains where he soon established an enviable reputation for the excellence of his prescription work.

The nostrum had no place on his shelves. It was largely through his activity, and that of his friend, John McCullough, of White Plains, that the Westchester County Pharmaceutical Association became one of the strongest of local organizations. Mr. Roemer was elected president of this organization and was thereafter re-elected for three terms. He became particularly interested in propaganda work for ethical pharmacy, and was made Chairman of the Propaganda Committee of the New York State Pharmaceutical Association, serving as such until one year ago.

He became a member of the American Pharmaceutical Association in 1910, and in 1914 he was elected to the presidency of the New York Branch of the American Pharmaceutical Association. He became widely known as a staunch advocate of ethical pharmacy, and there was scarcely any line of pharmaceutical activity with which he has not been identified during the past score of years. It is stated of him that "Many of the theories and policies which Mr. Roemer advocated several years ago have since been followed with incalculable benefit to the profession at large. Of poetic mien and a constant theorizer, he had his practical side, and most of his suggestions and recommendations for the good of pharmacy had a sound foundation on common sense and practicability."

Mr. Roemer had strong civic pride. He was prominent in the politics of his city and county. He was a member of the Board of Water Commissioners of White Plains. He was a charter member of White Plains Council, Royal Arcanum, and an active member of the Business and Professional Men's Association of White Plains. He was also a member of the Faculty of the Jersey City College of Pharmacy. Although never elected to office in the national pharmaceutical organization he served on a number of committees.

Among his contributions to the literature of pharmacy which he furnished in recent years may be mentioned a paper which was published in the August (1915) issue of the "Journal of the American Pharmaceutical Association" entitled "The Science of Phe-

nomena," read before the New York Branch. In this article, he advanced a new theory of pharmacodynamics, which related to the science of phenomena, as applied to drugs, basing the action of such on the energy within the atoms and molecules, which through the electro-motive forces of the body in reaction, is transformed into kinetic energy, resulting in the phenomena of drug action.

Among his other recent contributions were: "Non-Official Medicaments" (Journal A. Ph. A., 1914, 259), "Pharmacy of Oxy-cholesterin" (Jour. A. Ph. A., 1913, 9), and "Uniformity in Drug Standards and Uniform Requirements in Dispensing" (Jour. A. Ph. A., 1913, 625). The Journal is in receipt from him of a paper on "Solutions" written only one week before his death, which is published in this issue.

The funeral services of Mr. Roemer were held at his late residence on August 22, 1915.

He is survived by his wife, who was Miss Eve Haffner and two daughters, Gertrude and Maxine. J. W. E.

<>

JAMES O'HARE.

Dr. James O'Hare, whose death occurred recently, was one of the leading pharmacists of Rhode Island. He was born in Providence and received his schooling in that city. His apprenticeship was served with H. I. Leith and he entered business as a proprietor at the junction of Benefit and North Main Streets. A few years ago he added another store, also on North Main Street, and his ability as a business man was well displayed in the success of these stores.

Dr. O'Hare was a member of the Rhode Island Pharmaceutical Association, of which he was President, in 1891 and 1892, of the American Pharmaceutical Association, the N. A. R. D., the New England Branch of the American Pharmaceutical Association, and of the Rhode Island State Board of Health. He was the organizer of the Buying Club, known as the Providence Wholesale Drug Company. In all these organizations he was an active and progressive member, occupying positions of trust and responsibility.

There has been no pharmaceutical legislation enacted in the last twenty years in Rhode Island without Dr. O'Hare's active participation. He possessed, to use a colloquialism, "a nose" for legislation in any way adverse to pharmaceutical interests, and many bills, through his efforts, have either died in committee or been greatly modified before passage.

He was the author of the Rhode Island Poison Law, the Rhode Island Food and Drug Law, which at the time of its passage was pronounced the best in the country, and of the Educational Requirement Act. The latter was the first of its kind in the country, and requires a college of pharmacy education of all who contemplate having a drug business of their own. He was the most active worker in securing the charter for the Rhode Island College of Pharmacy, and in the work attending its establishment and maintenance up to the present time. He was its president, and the teaching force and student body alike keenly feel his loss.

In recognition of his professional ability, the Board of Trustees of the College in 1912 conferred upon him the honorary degree of Doctor of Pharmacy.

The review of his work as a business man, or as a professional man, reveals always the scientific man, and in this State he stood in the forefront of his calling.

J. W. E.

The Bulletin Board

OFFICERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1915-1916.

The officers of the American Pharmaceutical Association for the ensuing year are: President, W. C. Alpers, of Cleveland, Ohio; Vice-Presidents, C. H. La Wall, of Philadelphia, Pa.; E. A. Ruddiman, of Nashville, Tenn., and Linwood A. Brown, of Lexington, Ky.; members of the Council, Caswell A. Mayo, of New York; F. M. Apple, of Philadelphia, Pa., and H. V. Arny, of New York.

The officers of the Council are: Honorary President, F. C. Godbold, of New Orleans, La.; General Secretary, W. B. Day, of Chicago, Ills.; Editor, E. G. Eberle, of Dallas, Texas; Treasurer, H. M. Whelpley, of St. Louis, Mo., and Reporter on the Progress of Pharmacy, J. A. Koch, of Pittsburg, Pa.

House of Delegates: Chairman, H. P. Hynson, of Baltimore, Md.; Vice-chairmen,

F. W. Nitardy, of Denver, Colo., Dr. O. F. Claus, of St. Louis, Mo.; Secretary, Jeannot Hostmann, of New York.

The various sections elected the following officers: Commercial Interests—Chairman, R. S. Lehmann, of New York; Associates, E. H. Thiesing, of Cincinnati, Ohio; W. H. Cousins, of Dallas, Texas, and G. H. P. Lichthardt, of Sacramento, Cal.; Secretary, J. C. McGee, of Jackson, Miss.

Scientific—Chairman, W. L. Scoville, of Detroit; Vice-chairman, L. A. Brown, of Lexington, Ky., and J. L. Turner, of Brooklyn, N. Y.; Secretary, E. L. Newcomb, of Minneapolis, Minn.

Education and Legislation—Chairman, F. H. Freericks, of Cincinnati, Ohio; Associates, Louis Emanuel, of Pittsburgh, Pa.; Miss Zada Cooper, Iowa City, and C. H. Packard, of Boston, Mass.; Secretary, R. A. Kuever, of Iowa City, Iowa.

Practical Pharmacy and Dispensing—Chairman, Joseph Weinstein, of New York; Secretary, Lee Secheverell, of Denver, Colo.; Associate, Franz Berg, of Colorado Springs, Colo.

Historical Pharmacy—Chairman, Charles Holzhauer, of Newark, N. J.; Secretary, G. G. Marshall, of Cleveland, Ohio; Historian, E. G. Eberle, of Dallas, Texas.

Woman's Section—President, Mrs. G. D. Timmons, of Valparaiso, Ind.; Honorary President, Mrs. F. C. Godbold, of New Orleans, La.; Vice-president, Mrs. W. B. Philips, of Fruitvale, Cal.; Mrs. E. A. Ruddiman, of Nashville, Tenn., and Miss Jean Gordon, of Chicago, Ills.; Secretary, Miss Anna G. Bagley, of Columbus, Ohio; Treasurer, Mrs. W. B. Day, of Chicago, Ills.; Historian, Miss Bertha Ott, of Cincinnati, Ohio; Member of Executive Committee, Miss Clarissa M. Roehr, of San Francisco, Cal.

The nominees for the several elective offices follow and these names are to be submitted for vote by mail:

For President—F. J. Wulling, of Minneapolis, Minn.; C. H. La Wall, of Philadelphia, Pa., and C. H. Packard, of Boston, Mass.

For First Vice-president—L. A. Seltzer, of Detroit, Mich.; A. B. Huested, of Albany, N. Y., and C. W. Johnson, of Seattle, Wash.

For Second Vice-president, Charles Geitner, of St. Louis, Mo.; L. E. Sayre, of Lawrence, Kans., and G. H. P. Lichthardt, of Sacramento, Cal.

For Third Vice-president, F. T. Green, of San Francisco, Cal., R. A. Lyman, of Lincoln, Neb., and Philip Asher, of New Orleans, La.

For Members of the Council, W. C. Alpers, of Cleveland, Ohio, J. H. Beal, of Urbana, Ills., W. C. Anderson, of Brooklyn, N. Y.; Jose M. Diaz, of Havana, Cuba; W. H. Cousins, of Dallas, Texas; J. H. Dawson, of San Francisco, Cal.; F. C. Godbold, of New Orleans, La.; H. B. Mason, of Detroit, Mich., and W. G. Bolenbaugh, of Richmond, Va.

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THOSE WHO REGISTERED AT THE CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION IN SAN FRANCISCO.

Alpers, Wm. C.
Alpers, Wm. C., Mrs.
Anderson, Wm. C.
Anderson, Wm. C., Mrs.
Arledge, I. Curtis
Arny, H. V.
Asher, Philip
Asher, Philip, Mrs.
Asher, Julia, Miss
Asher, Goldie, Miss
Bailhoche, A. L.
Beal, J. H.
Benkma, Wm.
Birch, May E., Miss
Birch, Doris
Bost, W. D.
Bolenbaugh, Albert
Bohmanson, Robt. H.
Bohmanson, Robt. H., Mrs.
Bohmanson, E., Miss
Bohmanson, Greta, Miss
Brinker, J. H.
Buckner, J. C.
Burton, J. C.
Burton, J. C., Mrs.
Bushby, D. C.
Bushby, Mary
Caspari, C. E.
Chidester, G. D.
Chidester, Edith, Mrs.
Chism, J. S.
Christensen, H. C.
Claus, Otto F.
Cooper, Zada M., Miss
Corcoin, C. H.
Cote, B. Olive, Miss
Cousins, W. H.
Culley, John
Culley, John, Mrs.
Cushman, H. T.
Day, William B.
Day, W. B., Mrs
Day, Elsie
Dickman, Geo. C.
Dickman, Clara C.
Dilley, O. C.
Dilley, O. C., Mrs.
Doerr, Louis
Dohme, A. R. L.
Dohme, A. R. L., Mrs.
Dohme, Dorothy, Miss
Dohme, Aselyne, Miss
Doyle, R. A.
Dyne, B. G.
Dyne B. G., Mrs.
Dyne, Maurine, Miss
Eaton, Elzar O.
Eberle, E. G.
Eggers, E. G., Mrs.
Eichols, W. H.
Emmanuel, Louis
Emmanuel, Louis, Mrs.
Engelhardt, H.
England, J. W.
Faulkner, Ellis E.
Faulkner, Ellis E.
Faulkner, E. E., Mrs.
Felt, C., Mrs.
Felt, C., Miss

Felt, E. L., Mrs.
Felt, C. E., Miss
Gaessler, W. G.
Gayle, J. W.
Gietner, Chas.
Gietner, Chas., Mrs.
Godding, John G.
Godding, John G., Mrs.
Green, Frank T.
Gros, L. A., Mrs.
Gros, Lillian, Miss
Guest, W. H.
Guest, W. H., Mrs.
Halting, F. B.
Hamner, Z. P.
Hansen, Niels P.
Haymaker, F. B., Mrs.
Haymaker, F. B.
Hoffman, Edw.
Holzhauer, Charles
Holzhauer, Charles, Mrs.
Houghtelin, A. E., Mrs.
Howard, Fletcher, Mrs.
Huested, Alfred B.
Hynson, H. P.
Johnson, C. W.
Kirk, H. S.
Koch, Julius A.
Lackenbach, Fred I
LaPierre, Elie H.
LaPierre, Elie H., Mrs.
Larson, Martin
Lauer, E. H.
Laughlin, Mrs. B.
Lehmann, Robert S.
Lengfelt, J. L.
Lichthardt, G. H. P.
Lichthardt, G. H. P., Mrs.
Lindvall, Gus
Lindvall, Gus, Mrs.
Lindsley, Geo. H., Jr.
Linton, A. W.
Linton, A. W., Mrs.
Lloyd, John Uri
Long, J. H
Low, Margery, Mrs.
Lyman, R. A.
Lyman, R. A., Mrs.
Mahnke, Ruth, Miss
Miller, T. A.
Morgan, Chas. L.
Morgan, Chas. L., Mrs.
Munson, J. G.
McCartney, Frank L.
McDonnell, H. L.
McDonnell, S. A., Mrs.
McDonnell, A. B., Miss
McGee, J. C.
McKee, E. S.
McKellips, C. M.
McNair, J. J., Mrs.
Namakura, M. S.
Nelson, H., Mrs.
Nelson, Ethel E., Miss
Newcomb, E. L.
Nitardy, F. W.
Norton, C. A.
Norton, C. A., Mrs.
Nyswander, Ed., Mrs.
Oclen, Chas.
Oclen, Chas., Mrs.
Ostrofsky, Frank J.
Ostrofsky, Edna
Packard, C. H.
Pease, A. V., Mrs.
Peterson, Hugo C.
Philip, W., Bruce
Philip, Fayetta H.
Remington, J. P.
Rhoades, Helen, Miss
Rhoades, Mabel, Miss
Robetshek, J. H.
Robetshek, J. H., Mrs.
Roehr, Clarissa, Miss
Rogers, Edward
Root, Wilfred F.
Rudd, W. F.
Runyon, E. M.
Runyon, E. M., Mrs.
Rusby, H. H.
Rusby, Marguerite, Miss
Sanford, R. F.
Scherling, G.
Scerling, G., Mrs.
Scherling, Gertrude, Miss
Schmidt, Val
Schnehle, C., Jr.
Schneider, Albert
Scott. S. M., Jr.
Scoville, Wilbur L.
Scoville, Wilbur L., Mrs.
Secheverell, H. B.
Shier, John
Simonsmith, Haydie M.
Smith, Geo. C.
Snow, Clyde M.
Snow, C. M., Mrs.
Speer, Wm. O.
Staples, Z. I., Mrs.
Teeters, Wilber J.
Terrill, W. E.
Thiesing, E. H.
Thurston, Azor
Thurston, Azor, Mrs.
Thurston, Newman
Thurston, Emory W.
Thurston, Emory W., Mrs.
Troxler R. F.
Turner, Jos. L.
Vordick, A. H.
Vordick, A. H., Mrs.
Walker, Alfred
Wedekind, Mary, Mrs.
Wedekind, Estelle, Miss
Weinstein, Joseph
Wells, Willard
Winslow, Josephine Barbat
Whelpley, H. M.
Whelpley, H. M., Mrs.
White, Richard E.
White, R. E., Mrs.
Widing, J. G., Mrs.
Widrif, M. H., Mrs.
Williams, Seward W.
Wilson, A. C.
Wulling, Frederick J.
Zieffle, Adolph
Zieffle, Adolph Mrs.

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Societies

PROGRAM OF THE FORTY-FIRST CONVENTION OF THE N. W. D. A.

At Los Angeles, Wednesday, September 22. Members arrive at the headquarters in the Hotel Alexandria.

Thursday, September 23—Garden party tendered to the members by L. N. Brunswig, at his home, from 4 to 6 p. m.

Sunday, September 26—Members depart for Santa Barbara. Arrive at Santa Barbara at noon, Sunday, September 26.

Monday, September 27—Ten a. m., first business session; 2 p. m., second business session; 2 p. m., two-hour auto ride for ladies to the Old Mission and mountain drive to Montecito Valley; 9 p. m., president's reception and ball.

Tuesday, September 28—Ten a. m., third business session; 2 p. m., fourth business session; 2 p. m., auto ride for ladies to Old Mission Hope Ranch; tea at Potter Country Club; 8:30 p. m., informal meeting of wholesale druggists; 8:30 p. m., informal dance.

Wednesday, September 29—Ten a. m., fifth session; 2 p. m., informal meeting of wholesale druggists; 2 p. m., auto ride to Hope Ranch, Country Club, Cliff Drive, Mission,

Mountain Drive and Montecito Valley; 8:30 p. m., informal dance.

Thursday, September 30—Ten a. m., sixth session; 12 m., auto ride and barbecue at Hope Ranch Park, participated in by entire attendance; 4 p. m., informal meeting of wholesale druggists; 7:30 p. m., banquet.

Friday, October 1—Depart for San Francisco.

The Committee on Arrangements and Entertainment, of which C. F. Michaels, Vice-president of the Langley & Michaels Company, of San Francisco, is chairman, announces that all indications point to a large attendance.

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NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

It is expected that President Wilson will be present at the opening exercises of the National Exposition of Chemical Industries, September 20. This event will mark an epoch in the history of American chemical industries. Elaborate exhibits, showing processes and apparatus in actual work, have been provided. Part of the program for the week, following the opening day, are as follows:

Tuesday, September 21—Paper by R. S. Frinck, President Frinck Pyrometer Company, on "The Relation of Chemistry and Mechanical Manipulation to the Evolution of the Glass Industry."

Wednesday, September 22—"Foreign Markets for American Chemicals," by Thomas H. Norton, of United States Department of Commerce. "Accident Prevention in the Chemical Industries," by F. W. Keough, President of National Association of Manufacturers. "Transportation and Shipping Facilities with Foreign Countries," by Welding Ring, President American Exporters' Association. "The Aniline Dye Situation," by I. F. Stone, President National Aniline and Chemical Company.

Thursday, September 23—"Potash," by H. A. Huston, of German Kali Works.

Friday, September 24—"American Contributions to Industrial Chemistry," by S. P. Sadtler, of S. P. Sadtler & Sons. "Chemical Industry," by L. H. Backeland.

A motion picture program has been arranged by the Bureau of Commercial Economics at Washington. Many of the exhibitors will also have speakers in the auditorium, who will lecture and display by motion and slide pictures the work of their respective companies. This lecture and picture program will be announced from day to day on the exposition bulletin boards.

Under the auspices of the Bureau of Foreign and Domestic Commerce, some eight bureaus in the Department of Commerce, Interior and Agriculture are now arranging noteworthy and instructive exhibits, each of which will be typical and demonstrative of the work of that bureau.

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THE NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.

The National Association of Retail Druggists convened in Minneapolis during the week of August 30. The attendance was good and the meeting successful.

Before the annual session President Samuel C. Henry, a lineal descendant of Patrick Henry, was presented with a gavel carved from the wood of a tree on the Henry lands in Virginia.



M. A. STOUT,
Bluffton, Ind.,
President
N. A. R. D.

In his address Mr. Henry advocated uniformity in state laws, advised amendment of the patent laws and suggested a few changes in the Harrison law.

The Chicago Retail Druggists Association through representative John J. Boehm, presented resolutions requesting Congress to place the war tax where it belongs, on manufacturers of war material. That export duties should be imposed on drugs and chemicals sent out of the country.

Chairman Charles H. Huhn in a report suggested that stamp taxation should be so applied that the consumer would pay the tax.

The legislative committee report praised the Harrison law, but recommended minor changes in its application to proprietary medicines; condemned the over-taxing of druggists and the practice of boards of health in usurping powers which the law did not intend for them; urged reform of patent laws and upheld uniform price measures.

It was proposed that the sale of alcoholic liquors should come under the Harrison law

and be controlled by somewhat similar regulations. The Association favored the reintroduction of whiskey and brandy in the Pharmacopœia, desiring that these be only sold or dispensed by pharmacists as drugs. Dispensing by physicians was criticized; drug culture, so far as practical, encouraged.

Congressman George R. Smith advocated the passage of the Stevens price maintenance bill but stated that before such a measure can be passed, the public must be educated to understand the benefits of such regulation. J. Leyden White opposed the maintenance of a lobby in Washington, contending that this invited hurtful criticism from opponents of the bill.

OFFICERS FOR 1915-1916.

The officers elected for the ensuing year are: President, M. A. Stout, Bluffton, Ind.; First Vice-president, Sol, Eckstein, Milwaukee; Second Vice-president, W. H. Cousins, Dallas; Third Vice-president, L. T. Dunning, Sioux Falls, S. D.; Secretary, Thomas Potts, Chicago; Treasurer, Grant Stevens, Detroit; members chosen for a three-year term on the Executive Committee: Charles H. Huhn, Minneapolis, and Charles Harding, of Cincinnati.

THE WOMEN'S ORGANIZATION N. A. R. D.

The Women's Organization of the National Association of Retail Druggists elected Mrs. F. E. McBride, of Youngstown, Ohio, President; Mrs. Nellie F. Lee, of Philadelphia, Secretary; Mrs. John G. Otis, of Cincinnati, Treasurer; Mrs. J. F. Waterhouse, of Boston, to preside over the Executive Committee.

The meeting place for next year's convention is left with the Executive Committee.

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A man went into a druggist's shop and asked for something to cure a headache. The druggist held a bottle of hartshorn to his nose and he was nearly overpowered by its pungency.

As soon as he recovered he began to rail at the druggist and threatened to punch his head.

"But didn't it ease your headache?" asked the apothecary.

"Ease my headache!" gasped the man. "I haven't got any headache. It's my wife that's got the headache."—London Times.

Council Business

COUNCIL MEMBERS—1915-1916.

Alpers, Wm. C., 14th St. and Central Ave., Cleveland, Ohio.

Apple, Franklin M., 31st and Berks Sts., Philadelphia, Pa.

Arny, H. V., 115 W. 68th St., New York, N. Y.

Beringer, George M., 5th and Federal Sts., Camden, N. J.

Brown, Linwood A., 425 Transylvania Park, Lexington, Ky.

Caspari, Charles, Jr., University of Maryland, Baltimore, Md.

Caspari, Charles E., 2108 Locust St., St. Louis, Mo.

Claus, Otto F., 3513 Herbert St., St. Louis, Mo.

Day, William B., 74 E. 12th St., Chicago, Ill.

Eberle, Eugene G., P. O. Box 1539, Dallas, Texas.

England, Joseph W., 415 N. 33rd St., Philadelphia, Pa.

Fennel, C. T. P., 614 W. Court St., Cincinnati, Ohio.

Freericks, Frank H., 1215 Mercantile Library Bldg., Cincinnati, Ohio.

Godding, J. G., 278 Dartmouth St., Boston, Mass.

Godbold, F. C., 5601 Rosemary Place, New Orleans, La.

Hall, W. A., 200 Griswold, St., Detroit, Mich.

Hensel, Samuel T., 351 Mercantile Bldg., Denver, Col.

Hilton, S. L., 1033 22nd St., N. W., Washington, D. C.

Holzhauer, Charles, 53 Spruce St., Newark, N. J.

Hopp, Lewis C., 1104 Euclid Ave., Cleveland, Ohio.

Hynson, H. P., 423 N. Charles St., Baltimore, Md.

Koch, J. A., Pittsburgh College of Pharmancy, Pittsburgh, Pa.

Kauffman, George B., Front and Chestnut Sts., Columbus, Ohio.

LaPierre, E. H., 80 River St., Cambridge, Mass.

LaWall, Charles H., 39 S. 10th St., Philadelphia, Pa.

Lehman, Robert S., 375 3rd Ave., New York, N. Y.

Mayo, Caswell A., 66 W. Broadway, New York, N. Y.

McElhenie, Thos. D., 259 Ryerson St., Brooklyn, N. Y.

Rogers, Charles H., West Va. University, Morgantown, W. Va.

Ruddiman, E. A., 1916 Adilicia St., Nashville, Tenn.

Schneider, Alfred, 723 Pacific Bldg., San Francisco, Cal.

Scoville, Wilbur L., 81 Melbourne Ave., Detroit, Mich.

Snow, Clyde M., 74 E. 12th St., Chicago, Ill.

Stewart, Francis E., 11 W. Phil.-Ellena St., Philadelphia, Pa.

Weinstein, Joseph, 1771 Madison Ave., New York, N. Y.

Whelpley, Henry M., 2342 Albion Place, St. Louis, Mo.

Wilkerson, J. A., 2036 Russell St., St. Louis, Mo.

White, William R., 311 Grace St., Nashville, Tenn.

Wilbert, M. I., 1621 35th St., N. W., Washington, D. C.

Wulling, F. J., University of Minnesota, Minneapolis, Minn.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

ECHOLS, G. J.,
From 308 W. Main St., Richmond Va.
To residence unknown.

TANNEY, L.,
From Ft. Wm. McKinley, P. I.
To residence unknown.

MCEWEN, IRVING,
From 511 S. 35th St., Omaha, Neb.
To 509 S. 35th St., Omaha, Neb.

BROWN, A. E.,
From Ft. McDowell, Cal.
To Ft. Caswell, N. C.

LEAVITT, A. J.,
From 590 N. Raymond Ave., Pasadena, Cal.
To 900 N. Lake Ave., Pasadena, Cal.

ELISBURG, LOUIS A.,
From 5035 Washington Blvd., Chicago, Ill.
To 2157 W. North Ave.

FOREIGN FORMULARIES.

Owing to the numerous inquiries where the foreign formularies mentioned in the article, "Substitute Formulas for Specialties," in the August number of *The Journal*, can be obtained, Prof. Otto Raubenheimer asks us to state that book dealers in general can supply same. As they have to be imported he recommends G. E. STECHERT & CO., 151-155 W. 25th St., NEW YORK CITY, a firm which makes a specialty of importing books.

FABIUS CHAPMAN GODBOLD

Honorary President of American Pharmaceutical Association
1915-1916



FABIUS CHAPMAN GODBOLD

The Journal of the American Pharmaceutical Association

Volume IV OCTOBER, 1915 No. 10

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Entered at the Postoffice at Columbus, Ohio, as Second-Class matter.

Papers and communications for insertion in the JOURNAL should be sent to the Editor, E. G. Eberle, 63 Clinton Bldg., Columbus, Ohio. Subscriptions should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

F. C. Godbold, Honorary President American Pharmaceutical Association 1915-1916

The subject of this brief sketch, Fabius Chapman Godbold, was born in Franklin County, Mississippi, July 7, 1842, and here he grew to manhood. Mr. Godbold served for four years in the Confederate Army and after the close of the war made New Orleans his home, engaging in the drug business in 1866 and continued actively therein in that city until 1913, when he retired.

A few years more and the half century mark of service in pharmacy would have been reached and in that period Mr. Godbold encouraged every movement that contributed for its advancement in the State of his adoption. It was largely through his efforts that the Louisiana Pharmacy Law was enacted and he was honored by appointment when the first Pharmacy Board under its provisions was created, serving as secretary for twenty-one years. He is a charter member and Ex-President of the Louisiana Pharmaceutical Association.

When the National Association of Boards of Pharmacy was organized, he at once took active part in the work and in 1906 at the meeting in Indianapolis was chosen President. He has also taken an active interest in the National Association of Retail Druggists, contributing his efforts and encouragement.

He joined the American Pharmaceutical Association in 1887 and until a few years ago Mr. and Mrs. Godbold were regular attendants at the annual conventions. Mr. Godbold has served the Association in various capacities, holding the Chairmanship of the Council, 1909-1910. The honor which has now been conferred, that of Honorary President of the American Pharmaceutical Association, comes to him as a reward of long and faithful service in the Association and for its advancement.

REPORT OF THE COMMISSION ON PROPRIETARY MEDICINES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

The duties assigned to the Commission on Proprietary Medicines of the American Pharmaceutical Association are:

(1) "To inquire into and to report to the Council from time to time upon the general subject of proprietary medicines in their relations to pharmacy, medicine and the public health.

(2) "To inquire whether, or to what extent, the proprietary medicines commonly known as patent medicines, contain alcohol or habit-forming narcotic drugs in sufficient proportions to render them liable to create an alcohol or drug habit, or satisfy such habits when otherwise created.

(3) "To inquire whether, or to what extent, the commonly advertised patent medicines contain potent drugs in sufficient proportion to render them dangerous in the hands of the laity.

(4) "To inquire into the extent to which patent medicines are fraudulently advertised, or differ in composition or origin from the claims made for them, or the extent to which they are advertised for the use of diseases for which no cure is known to medical science."

The scope of the functions above imposed is sufficiently comprehensive to include practically every phase of the proprietary medicine question which the Commission may choose to consider, and since the number of proprietary medicines on sale in the United States is estimated at 40,000 to 50,000 items, (inclusive of the large number used by the medical profession, but exclusive of the thousands of druggists' "own make" preparations, usually of only local reputation) it will be seen that the task assigned to the Commission is by no means a trivial one.

While the literature relating to proprietary medicines is of enormous volume, —if much of the printed matter relating to this subject can be dignified by the name of literature—a very large proportion of it is of so controversial a character that it may be dismissed at once as of little value, consisting in large part of sweeping general assertions against or in favor of proprietary medicines, the sifting of which results in a vast amount of chaff and very little wheat.

The policy of the American Pharmaceutical Association has always been distinctly unfavorable to the increased use of proprietary medicines, including both those supplied for the use of the medical profession and those intended for direct sale to the general public, and long before the American Medical Association began its active campaign against them the former association had repeatedly placed itself on record in opposition to the multiplication of ready-made medicinal agents, for the reason, aside from other considerations, that the use of such forms of medication has a tendency to reduce the dispensing pharmacist from the

* Presented to the Council of the A. Ph. A. at the 63d annual convention of the Association, San Francisco, August 9-14, 1915

rank of a compounder of drugs and medicines to that of a mere dealer in the merchandise of other manufacturers.

Not only does the use of proprietary medicines tend to reduce the legitimate compounding profits of the pharmacist when they are dispensed by him on the order of the physician, but the readiness with which such medicines lend themselves to dispensing by physicians, and the avidity with which physicians have availed themselves of this quality have combined to relieve the retail pharmacist of a great deal of dispensing business, though in theory he is the legalized distributor of medicinal agents.

In the case of the proprietary medicines which are advertised and sold directly to the general public, the situation as it affects the retail pharmacist, is equally unsatisfactory. Even when the advertised prices are obtained the retailer's profit on such articles is only moderate, and when they are sold at cut prices, as is frequently the case, the percentage of profit is usually less than the net percentage cost of doing business.

While the American Pharmaceutical Association has never formally recognized the right of proprietorship in medicinal agents, the American Medical Association, on the other hand, has yielded to the necessities of the situation, and through the action of its Council on Pharmacy and Chemistry has placed the stamp of legitimacy upon numerous patented or protected chemicals, or other articles of proprietary origin. In granting such recognition, however, certain conditions and regulations are imposed which tend to effectually guard the financial and professional interests of the medical profession, and which brand with professional disapproval all proprietary remedies likely to reach the hands of the laity otherwise than through the physician or on his prescription.

Among the most useful of these regulations of the Council on Pharmacy and Chemistry are:

Rule 3, which prohibits the recognition of any medicinal agent that is advertised directly to the general public. Only insecticides, germicides, disinfectants, and non-medicinal foods are excepted from this rule, and these are excepted only when they are not advertised as curative agents.

Rule 4, which prohibits the recognition of any article whose label, package, or accompanying circulars contain the names of the diseases for the treatment of which the article is said to be indicated.

(This rule does not apply to remedies with which self medication is obviously improbable, such as vaccines and antitoxins, nor to cases where similar immediate heroic treatment is indicated.)

Rule 8, which excludes from recognition all articles whose names are suggestive of the diseases or pathological conditions for which they may be used, or which are suggestive of therapeutic indications.

Since without direct advertising (prohibited by Rule 3) the general public would not learn of the existence of proprietary remedies, and would not be likely to purchase them without information as to the affections for which they are intended, (the giving of which information is prohibited by Rules 4 and 8) it follows that if these rules could be given the force of law and universally enforced, the sale and use of proprietary medicines, except under the direction of qualified physicians, would be reduced to a negligible quantity.

While these rules are admirably adapted to conserve the financial and professional interests of the physician, their application to remedies intended for sale to the general public could hardly operate otherwise than to still further contract the small volume of business left to the pharmacist by the dispensing physician.

Druggists' own make preparations and those produced by cooperative companies are clearly within the category of proprietary medicines if they are recommended to the laity for self-medication, and hence must be subject to the same rules regulating advertising and labeling. If the right to bring ready-made remedies to public attention and to state on the labels and wrappers what they are to be used for be denied, the sales of such articles would soon decline to the vanishing point. Whether in such case physicians would enthusiastically begin the writing of prescriptions is a question which one druggist should be able to answer as well as another. The risk is with the druggist, and it is not surprising that he should hesitate to approve a step which would mean a certain reduction of income on the chance of an uncertain gain from another source.

Unfortunately the problems involved in the use of proprietary medicines, especially those known as patent medicines, have too frequently been discussed from a purely partisan standpoint, and in a manner better calculated to cloud judgment than to illuminate it.

1. Too many inconsistent and self-contradictory arguments have been presented in behalf of the same proposition. For example, thousands of analyses have been published tending to show that proprietary medicines are not the result of great and wonderful discoveries made by their manufacturers, but that, on the contrary, they are in many cases combinations of well known and commonly used drugs, recognized by the medical profession as valuable remedies when properly applied. This is a good argument to explode the fanciful claims frequently made for proprietary medicines, but it has been largely nullified by sweeping general statements to the effect that all proprietary medicines are dangerous or worthless, which immediately prompts their defenders to inquire why they should be considered dangerous and worthless if they are practically the same as the combinations used by physicians, and why a given mixture should be considered a valuable and efficient remedy when dispensed by or on the order of a physician, and dangerous and worthless when put up in a carton with printed label and wrapper.

The net result of such contradictory arguments is only to weaken the faith of the public in the efficiency of medicines in general, and to have the impression that proprietary remedies are at least as good as any others, since none of them amounts to very much.

2. While condemning proprietary remedies which are widely advertised, and have a general sale, pharmacists have not hesitated to recommend their "own make" preparations of similar character in their place, from which the customer is likely to infer that the opposition to the advertised remedy is prompted mainly by the fact that it does not return as good a profit as the home compounded mixture.

The argument that the own make preparation is non-secret, has but little weight with the average layman. He reasons that all he wants to know is what the mixture is good for, and that his information will not be advanced by a statement of

ingredients of whose separate qualities and medicinal value he knows little or nothing.

3. While declaiming against proprietary medicines as a class, pharmacists have not hesitated to continue to stock and sell them, or to recommend them by the recital of cases where they have been used with apparent benefit.

In this respect the physician has been as inconsistent as the pharmacist. Thousands of registered physicians are also the owners of drug stores, but we have yet to learn of a physician druggist,—though there may be such—who does not carry a full line of popular patent medicines for sale to all who ask for them; nor would it be difficult to show that many physicians have used and continue to use such remedies in their private practice.

4. In most of these discussions only minor emphasis has been placed upon the fact that the greatest evil of the patent medicine industry is the falsity and extravagance with which its products have been exploited. This is the basic evil of the patent medicine business and the point where it is most vulnerable, and an attack upon this evil needs no argument for its justification.

Numerous patent medicines are mixtures which have some merit if properly applied in cases for which they are adapted; the evil is not in the remedies themselves but in the method of their exploitation. Sweeping general assertions of the absolute worthlessness of patent medicines, besides being untrue, have a contrary effect to the one intended, as for example, the following, attributed to a prominent antagonist of proprietary medicines, "Every advertised cure for disease is a fraud. Its vendor is a quack; his publisher an accomplice; his patron a dupe. One rule covers the field, if it's medical it's a fake," "An honest and meritorious medicine could not live," "A real cure couldn't make office rent," etc. Most people have used patent medicines sometime in their lives, and when they read such statements as the above are inclined to suspect that the whole campaign against ready-made remedies is insincere and prompted largely if not wholly by selfish motives.

DEFINITIONS FOR PROPRIETARY MEDICINES, ETC.

One of the first tasks attempted by the Commission was the adoption of a set of general definitions to serve as a basis for its deliberations, and this has proved to be by no means as easy and simple as it might appear.

The definitions finally decided upon, though formulated only after considerable thought and consultation of authorities, are not assumed to be perfect, and suggestions for their further improvement will be welcomed.

Proprietary Medicine—A judicial definition of proprietary medicine found in the case of *State vs. Donaldson,* (41 Minn., 80-83) is as follows:

"It is a matter of common knowledge that what are called 'patent' or 'proprietary' medicines are prepared for immediate use by the public, put up in packages or bottles, labeled with the name and accompanied by wrappers containing directions for their use, and the conditions for which they are specifics. In this condition they are distributed over the country in large quantities and sold to consumers in original packages, just as they are purchased by the dealer, without any other or further preparation or compounding."

It is evident from the language employed that the learned judge had in mind only the class of preparations commonly known as "patent medicines," and the definition therefore is properly applicable only to that class of proprietaries.

The definition adopted by the Council on Pharmacy and Chemistry of the American Medical Association, reported in *New and Nonofficial Remedies*, is as follows:

"The term 'proprietary article,' in this place shall mean any chemical, drug or similar preparation used in the treatment of disease, if such article is protected against free competition, as to name, product, composition or process of manufacture by secrecy, patent, copyright, or in any other manner."

The latter definition possesses the advantage of compactness, with substantial accuracy, but does not set forth the factors of proprietorship with sufficient detail to meet all of the requirements of the Commission.

The essential feature of proprietorship is the special ownership claimed or assumed by the manufacturer of the exclusive right to manufacture and sell the mixture, or the exclusive right to the use of the name or title under which it is sold, and this is the feature which the Commission has sought to emphasize in the following definition:

"In its widest sense, a proprietary medicine is any drug, chemical or preparation, whether simple or compound, intended or recommended for the cure, treatment or prevention of disease, either of man or of lower animals, the exclusive right to the manufacture of which is assumed or claimed by some particular firm or individual, or which is protected against free competition as to name, character of product, composition or process of manufacture by secrecy, patent, copyright, trade-mark, or in any other manner."

Classification of Proprietary Medicines—The most obvious classification of proprietary medicines is, of course, into ethical preparations, or those which are advertised only to the medical profession, and non-ethical or patent medicines, or those which are either advertised directly to the general public, or named or advertised in such a way that in course of time the public will become acquainted with their properties, and thus be lead to purchase them direct, without the advice of a physician.

While it is simple enough to make a distinction between the two classes on paper, it is much less simple to make a practical application of the distinction.

While in theory physicians prescribe and use only those of the first class, as a matter of fact they frequently prescribe and perhaps still more frequently use those of the second class, though usually with the precaution of removing the label, or transferring the medicine to another package so that its proprietary character is not recognizable.

Bearing upon the difficulty of distinguishing between ethical and non-ethical preparations is the following extract from an editorial in the *Journal of the American Medical Association*, (Vol. 64, p. 530):

"When the Council on Pharmacy and Chemistry was started we announced that we did not see any clear line of demarcation between 'patent medicines' and many so-called 'ethical proprietaries.' Time has not caused us to change our opinion."

To the same effect is the following extract from a letter by the Editor of the *Journal of the American Medical Association* to the Chairman of the Commission, which is quoted by permission:

"A 'proprietary' medicine is one that is owned and controlled by some individual, corporation or company. The name itself defines it. There is no difference between a 'proprietary' and a 'patent' medicine. The latter is a misnomer, but is generally applied to proprietary medicines that are advertised directly to the public. These are about the views expressed in *The Journal* on many and various occasions. At the very beginning of our propaganda work, some nine years ago, I brought out this point, and it raised a howl among the 'ethical' proprietary manufacturers. But as time has gone on I believe that the average doctor has begun to realize the same thing. Listerine used to be advertised in medical journals only; it was then an 'ethical' proprietary. Now it is advertised in lay publications; hence it is a 'patent' medicine. But I do not think it is any more a patent medicine now than it was ten years ago; or that it was any more an 'ethical' proprietary ten years ago than it is to-day. So also with Antikamnia."

The distinction then between ethical and non-ethical proprietaries is not in the character of their composition, but in the manner of their exploitation. An otherwise ethical preparation exploited in a non-ethical way thereby becomes non-ethical, and this regardless of its composition or usefulness. Secrecy, while an element, is not the only element in determining the non-ethical character of a preparation, because not even the open publication of the formula will save it from being classed as non-ethical, if exploited to the general public, or if exploited in a non-ethical manner.

As stated by Editor Simmons in the letter above quoted, the term patent medicine is a "misnomer." It was applied originally to remedies protected by letters patent and sold in packages of distinctive form and size. Later the custom of taking out patents upon medicinal mixtures ceased, but the custom of selling them in packages of distinctive form and size continued, and so they have continued to bear the same designation as formerly. The term is now wholly inappropriate, but is apparently so firmly fixed in usage that it seems likely to persist as long as the class of remedies to which it is habitually applied continues in existence.

The distinction between the two classes of proprietaries finally approved by the Commission is expressed in the following definitions:

Proprietary Medicines Exploited in Accordance with the Requirements of Medical Ethics, or so-called "Ethical Proprietaries": Proprietary medicines, the active ingredients of which, with their proportions, are stated on the label or otherwise published, and which are not advertised to the general public, either through the public press, by accompanying circulars or in any other manner, and not accompanied by printed matter calculated to encourage their use by the laity without the advice of a physician.

"Proprietary Remedies Advertised Directly to the Public," or so-called "Patent Medicines": Proprietary medicines, whether of secret or open formula, which are advertised directly to the general public through newspapers, by circulars or in any other manner, and the packages of which are accompanied by printed matter specifying the affections, symptoms, or purposes for which the remedies are recommended, and directions for their use.*

* The terms "ethical" and "non-ethical" as employed in this report are intended merely to distinguish between remedies exploited in accordance with the rules of medical ethics regarding the advertising of medicinal agents, and those advertised to the general public in contravention of such rules. The terms have been used for want of better, and are not to be understood as implying any idea of relative merit.

Patented Medicines—While it is no longer customary to grant patents upon preparations which are mere mixtures of known remedial agents, it is still the custom to grant patents upon newly discovered chemical compounds which have an alleged use in medicine, and these derivatives of the tar barrel, or "German synthetics," are among the most commonly used medicinal agents employed by the medical profession.

In order to distinguish these really patented products from the unpatented "patent medicines," the following definition has been adopted:

"Patented Medicine": Any proprietary medicine protected by an unexpired patent issued by the Government of the United States or by the government of any foreign country.

Drug Habit and Habit-Forming Drugs—One of the duties imposed upon the Commission is to determine to what extent "the proprietary medicines commonly known as patent medicines contain alcohol or habit-forming narcotic drugs in sufficient amount to render them liable to create an alcohol or drug habit, or to satisfy such habits when otherwise created," which necessitates a clear understanding of the terms drug habit and habit-forming drugs.

While these terms are fairly well understood by medical authorities, attempts are sometimes made to stretch their application to an unwarranted extent. Some would class as a drug habit the taking of the same remedy for a recurrent ailment, although the drug was not used between the successive recurrences, and although there was no increase in the dosage required for relief. As one such correspondent puts it, "if a man in a malaria country takes quinine every time he has 'the shakes,' he has a drug habit, and quinine is the habit-forming drug."

Such definitions are, of course, mere verbal plays upon the terms habit and habit-forming, and are not worthy of serious consideration.

If we examine a typical case of drug habituation we shall find certain elements constantly present:

1. Increased tolerance for the drug, so that doses can be safely taken that would have produced serious or even fatal results if taken before habituation was established.

2. The continuance of the drug after the occasion for which it was originally used has passed, for the sake of obtaining the physiological effects of the drug alone, or of avoiding the effects which would result from its discontinuance.

3. The sudden discontinuance of the drug produces a marked sense of discomfort, and may occasion serious functional disturbance.

After consultation of various authorities, the Commission has decided upon the following definitions:

"Drug Habit": An acquired tolerance for quantities of a drug in excess of the normal, safe dose, and a craving or appetite which can be satisfied only by the continued use of such drug, or of some other drug of equivalent or similar physiological properties.

"Habit-Forming Drug": Any drug or mixture the continued use of which leads to the toleration of quantities greatly in excess of the normal, safe dose, or to a constitutional craving or need for the drug, the sudden discontinuance of which occasions a marked sense of discomfort, and may cause serious or well-marked functional disturbance.

THE BRITISH PARLIAMENTARY COMMITTEE REPORT.

In 1914 there appeared the Report of the Select Committee of the House of Commons which had been directed to make a general inquiry into the trade in patent and proprietary medicines as conducted in Great Britain. The inquiry extended through three sessions of Parliament, during which thirty-three public sittings were held, 42 expert witnesses were examined, and more than 14,000 questions were propounded.

Nine of the witnesses were representatives of Government Departments, eleven were medical practitioners, five were public analysts, four were wholesale or manufacturing druggists, and nine were the manufacturers of proprietary medicinal preparations.

The printed report presents the conclusions of what was probably the most extended and complete investigation of the proprietary medicine industry ever made under official supervision.

While the report is entirely too long for presentation at this place, a brief synopsis of its principal features may be of interest.

The report presents a review of the laws of Great Britain and her colonial possessions, from which it would seem that in Great Britain there is much less control of the sale of fraudulent and dangerous medicines than is exercised in the United States through the operation of the Federal Food and Drugs Act, and of similar acts in most of the states.

Analyses of Secret Remedies—The difficulty of making accurate analyses of remedies containing vegetable extractives is considered and the conclusion reached that complete identification of the ingredients of a complex mixture may be impossible when drugs are used which do not contain constituents of well-marked chemical characteristics, and that of a mixture of vegetable extracts the maker "can truthfully say that the composition of his remedy cannot be discovered by analysis," and also that mixtures of "tinctures, infusions, decoctions, extracts, etc., may defy all chemical, microscopic, spectroscopic, olfactory or physiological analysis. While a mixture, therefore, may have a therapeutical value, it may also be made to defy the analytical exposure of a fraudulent claim of therapeutical value."

Classification of Proprietaries—In the language of the Report: "Patent and proprietary medicines differ very widely in character. At one end of the scale is the valuable scientific preparation; at the other end is the mere vulgar swindle. Any useful consideration of them must therefore be preceded by some classification into distinct categories, as these may call for widely differing treatment in the public interest, corresponding to their differences of character."

Non-secret proprietaries are divided into the three following groups:

1. "Genuine drugs originally produced synthetically, or extracted from crude compounds by skilled chemists and tested by therapeutists," the processes of manufacture of which are patented or the names of which are registered as trademarks, represented by such examples as aspirin, adrenalin, and urotropin.

2. Remedies "that contain no new drugs, but are only new combinations, depending for their potable or assimilable qualities upon the skill with which they

are compounded," as "various emulsions of cod-liver oil or petroleum, and mixtures of bismuth with pepsin."

3. Non-secret drugs with secret excipients, or "known drugs with formula disclosed, mixed for purposes of convenient or elegant manufacture with minute quantities of medically inert substances, the nature of which is a trade secret."

Concerning the above three groups the report states: "It will be evident that unless some of the above drugs are such as should not be sold at all; unless it should be thought desirable to forbid unfounded claims of efficacy in curing disease; or unless any restriction of the multiplication of trade names be recommended, there is nothing in the above Class calling for interference in the public interest."

Secret Remedies—Secret remedies are classified under four groups which may be summarized as follows:

(1) "Household Remedies," often originally manufactured from a doctor's family prescription, and undoubtedly beneficial for uncomplicated ailments, * * * Except for the fact that often the advertisements of them recommend their use for cases they cannot benefit, thus causing the purchaser to run the risk of serious injury by delay in securing proper medical treatment, there is little or nothing to criticize in their sale."

(2) "Dangerous remedies and drugs for improper purposes," "which should not be sold at all, or which should be sold only on a doctor's prescription, or which should not be sold for the purpose for which they are offered."

(3) "Fraudulent remedies," "consisting of abortifacients, of alleged cures for cancer, consumption, diabetes, paralysis, locomotor ataxia, Bright's disease, lupus, fits, epilepsy, rupture (without operation or appliance), deafness, disease of the eye, syphilis, etc., together with electric belts, apparatus for supplying oxygen to the system, (other than by inspiration), 'ionized' waters," and the like. "There should be little difficulty in identifying remedies of this class, and their treatment in the public interest need involve no doubt or hesitation. They are, and are known by their makers to be, cruel frauds; and the sale and advertisement of them should be prohibited under drastic penalties."

(4) "Genuine simple remedies" which possess real therapeutic value, but "depending for their sale largely or wholly upon the extravagant promises they hold out to the purchaser," including such as "under the name of misbranding," are "now prohibited by law in the United States," and such as are "refused admission into Australia."

Concerning the latter the Report says: "This group presents obviously great difficulties in drawing the line between claims which are merely 'puffs' and claims which are fraudulent, but we regard it as beyond question that the public is defrauded on a large scale by promises which cannot possibly be fulfilled."

The report submits examples of questionable secret remedies and of the exaggerated and fraudulent claims made for them, and of "fake prescription proprietaries" under coined names especially designed to "deceive the public into the belief that they are not proprietary articles, but are familiar drugs, purchasable in small quantities at ordinary prices."

Examples of British nostrums of this class are "pure colorless kalamax," "salith leaves," "stallax," "pilenta soap," "jettaline," "allacite of orange blossom," "tennaline," "carmarole," etc.

The Trade in Abortifacients—Judging from the space devoted to the subject, abortifacients or alleged abortifacients are more numerous and are advertised and sold more openly in the United Kingdom than in the United States.

From the report it appears that these abortifacients are not commonly sold in the form of recognized proprietary medicines, but it is said that "simple aperient pills from reputable makers are frequently recommended in language suggesting that they are efficacious for this purpose," as, for example, the recommendation that "women suffering from any 'unusual delay' take 5 pills a day."

The Medical Profession and Secret Remedies—The Committee states that "so far as we have been able to discover, no scientific chemist and no qualified medical man, with rare exceptions, is connected with or employed in the manufacture of secret remedies such as those we have placed in Class B," (secret remedies) which is certainly contrary to experience in America, where a considerable number of medical frauds have been exploited by persons regularly licensed to practice medicine.

The report admits, however, "that many medical men give testimonials (with the use of their medical qualifications but without the use of their names) to proprietary and secret remedies."

The Publication of Formulæ—Perhaps the most unexpected feature of the report is the position which the Committee takes with regard to the publication of the formulæ of proprietary remedies. Considering that the personnel of the Committee was one which suggested the probability of a report unfavorable to the proprietary medicine business in general, and that the majority of the witnesses examined were those whose official positions or personal interests might prompt them to oppose the sale of secret medicines, it was anticipatd that one of the recommendations of the Committee would be an unqualified pronouncement in favor of compelling the publication of formulæ of proprietary remedies. The conclusions of the Committee, are, however, quite the reverse, as will appear from the following:

"It has been strongly urged upon us, chiefly by witnesses representing the medical profession, that every remedy sold should by law be compelled to bear a label stating its exact composition. This is what is meant by 'exhibition of formula,' and witnesses advocating it came to us convinced that this simple change in the law would secure adequate protection of the public against injury and fraud."

"We have given long and careful consideration to this proposal, and we find ourselves unable to recommend it. In the first place it would beyond question inflict a grave hardship, sometimes amounting to ruin, upon proprietors of secret remedies, or the loss of their investments upon shareholders in limited companies. Any long established remedy in the lawful advertising and sale of which very large sums have been spent, would immediately be faced upon the market by a score of preparations advertised as made from the same formula and sold at a much lower price. An example was given to us of a remedy the proprietary rights of which were immediately destroyed by disclosure of its formula.

"The above would not, we are aware, be a conclusive argument against this pro-

posal if its adoption would really protect the public against danger and fraud. We are convinced, however, that such would not be the case. Any benefit resulting from exhibition of formula must obviously depend for its efficacy upon the intelligence and education of the intending purchaser. It could not in any other way afford protection to the purchaser or restrict the operations of the vendor, though incidentally it would enable a retail chemist to offer the same drug or mixture made up by himself, at a lower price. But to a large majority of purchasers a statement of composition or contents on the label would afford no information whatever. The disclosure that a remedy contains or consists of 'acetylsalicylic acid,' or 'hexamethylene-tetramine,' or 'phenolphthalein,' or 'taka-diastase,' or 'emplastrum plumbi,' or even 'acetanalide,' or 'potassium iodide,' would be meaningless to most people; indeed, the simplest substances might acquire distinction from being described in technical chemical language—soap, for instance, a large ingredient of the most popular aperient pills, posing as 'sodium oleate and stearate.' And if it be rejoined that the popular name should be required to be given, the answer is obvious that many of the most important drugs, such as most of those mentioned above, have no popular name. Further, an accurate statement of contents might be in itself misleading. For example, if 'Phosferine' were stated to contain phosphoric acid, almost every purchaser would believe that he was getting assimilable phosphorus."

"For these reasons exhibition of formula (except in the case of alcohol, poisons, and certain dangerous drugs) does not appear to us to be a proper, practical or effective measure."

Recommendations—The principal points of the final recommendations of the Parliamentary Committee are as follows:

"That the administration of the law governing the advertisement and sale of patent, secret and proprietary medicines and appliances be coördinated and combined under the authority of one Department of State."

"That there be established at the Department concerned a register of manufacturers, proprietors and importers of patent, secret and proprietary remedies, and that every such person be required to apply for a certificate of registration and to furnish (*a*) the principal address of the responsible manufacturer or representative in this country, and (*b*) a list of the medicine or medicines proposed to be made or imported."

"That an exact and complete statement of the ingredients and the proportions of the same of every patent, secret and proprietary remedy; of the contents other than wine, and the alcoholic strength of every medicated wine, and a full statement of the therapeutic claims made or to be made; and a specimen of every appliance for the cure of ailments other than recognized surgical appliances, to be furnished to this Department, such information not to be disclosed except as hereinafter recommended, the Department to control such statement, at their discretion, by analyses made confidentially by the Government Chemist."

"That a special Court or Commission be constituted with power to permit or to prohibit in the public interest, or on the ground of non-compliance with the law, the sale and advertisement of any patent, secret or proprietary remedy or appliance, and that the commission appointed for the purpose be a judicial authority such as a Metropolitan Police Magistrate sitting with two assessors, one appointed by the Department, and the other by some such body as the London Chamber of Commerce."

"That a registration number be assigned to every remedy permitted to be sold, and that every bottle or package of it be required to bear the imprint 'R N.' (with the number), and that no other words referring to the registration be permitted."

"That in case of a remedy the sale of which is prohibited, the proprietor or manufacturer be entitled to appeal to the High Court against the prohibition."

"That the Department be empowered to require the name and proportion of any poisonous or potent drug forming an ingredient of any remedy to be exhibited upon the label."

"That every medicated wine, and every proprietary remedy containing more alcohol than that required for pharmacological purposes, be required to state upon the label the proportion of alcohol contained in it."

"That the advertisement and sale (except the sale by a doctor's order) of medicines purporting to cure the following diseases be prohibited:

cancer	diabetes	locomotor ataxia
consumption	paralysis	Bright's disease
lupus	fits	rupture (without operation
deafness	epilepsy	or appliance

"That all advertisements of remedies for diseases arising from sexual intercourse or referring to sexual weakness be prohibited."

"That all advertisements likely to suggest that a medicine is an abortifacient be prohibited."

"That it be a breach of the law to change the composition of a remedy without informing the Department of the proposed change."

"That fancy names for recognized drugs be subject to regulation."

"That the period of validity of a name used as a trade-mark for a drug be limited, as in the case of patents and copyrights."

"That it be a breach of the law to give a false trade description of any remedy, and that the following be a definition of a false trade description: 'A statement, design or device regarding any article or preparation, or the drugs or ingredients or substances contained therein, or the curative or therapeutic effect thereof, which is false or misleading in any particular.' And that the onus of proof that he had reasonable ground for belief in the truth of any statement by him regarding a remedy, be placed upon the manufacturer or proprietor of such remedy."

"That it be a breach of the law—

(*a*) "To enclose with one remedy printed matter recommending another remedy.

(*b*) "To invite sufferers from an ailment to correspond with the vendor of a remedy.

(*c*) "To make use of the name of a fictitious person in connection with a remedy. (But it should be within the power of the Department to permit the exemption of an old established remedy from this provision.)

(*d*) "To make use of fictitious testimonials.

(*e*) "To publish a recommendation of a secret remedy by a medical practitioner unless his or her full name, qualifications and address be given.

(*f*) "To promise to return money paid if a cure is not effected."

A PROVISIONAL STANDARD FOR PATENT MEDICINES.

In view of the extended work of the A. M. A. Council on Pharmacy and Chemistry upon proprietaries addressed especially to the medical profession, it is not likely that the Commission will greatly concern itself with this particular class of preparations, except perhaps in connection with their purely trade relations.

As regards non-ethical proprietaries, or patent medicines, the Commission has undertaken to formulate a set of tentative declarations setting forth certain requirements as a minimum standard which non-ethical proprietary medicines should meet in order to render them safe in the hands of the general public.

It should be noted that these declarations are put forward as provisional, and that they do not necessarily represent the final opinion of the Commission as to the requirements with which this class of preparations should be expected to comply.

The reasons for the adoption of some of these declarations will probably be sufficiently apparent without explanation. In the case of some others a brief review of the reasons which lead to their adoption may be of value.

Fraudulent Prescription Nostrums—Some ten or a dozen years ago, there appeared a class of proprietary articles, now commonly known under the title of "fraudulent prescription nostrums," which because of the cleverness with which they were advertised immediately became very profitable to their exploiters, and as a consequence increased in numbers until they have become a veritable plague to the drug business, both wholesale and retail. While differing in other respects, these nostrums possess the common characteristic of employing fanciful or coined names designed to conceal their proprietary character and to convey the idea that they are simple chemical compounds, or known vegetable drugs commonly found in drug stores and purchasable in small quantities.

One popular form of advertisement for these nostrums is a pretended prescription or formula, the name of the nostrum being cleverly introduced among a list of popularly known drugs, the combination either to be made up by the druggist or by the purchaser himself.

Many of these hypocritical formulas appeal to the feminine desire for personal beauty, and are exploited as the prescriptions of alleged medical specialists or as used by some famous stage beauty.

Chemical analyses of this particular breed of nostrums show that they are frequently composed of the most common and cheap ingredients, as table salt, baking soda, alum, borax, powdered soap, etc., tinted and scented to conceal their simple character, and usually sold at prices enormously in excess of their real value.

Admitting that certain of these combinations may possess some of the cosmetic or medicinal value claimed for them, the Commission is of the opinion that the plain hypocrisy of their exploitation is indefensible upon any ground of fair commercial practice, and has accordingly introduced into the list of requirements for proprietary medicines the following:

Prescription Fakes, Concealment of Proprietary Character—The preparation must not be named or advertised in such a way as to conceal its proprietary character and lead the purchaser to believe that it is a simple chemical or vegetable drug ordinarily purchasable in small quantities, instead of a proprietary mixture or substance.

Mail Order Medicines—Another class of proprietaries deserving of special mention are the products of what may be denominated as the "mail order prac-

tice of medicine." This scheme is usually worked in the name of a physician or company of physicians, operating either on their own account or in the employment of third persons, and consists in the use of newspaper advertisements or of purchased mailing lists to get into communication with prospective customers and then continuing the connection by means of mail correspondence. Pretentious symptom blanks are sent to the patient to be filled out, but no matter what the symptoms are, the case is treated by the sending of one or more stock mixtures which seem to fit every case.

If these ready-made mixtures were found in the stock of a drug store they would undoubtedly be denominated patent medicines, but if they were found in either wholesale or retail drug stocks they would be subject both to federal and to state food and drug laws, and to investigation and analysis by state food and drug departments. Masquerading as they do under the disguise of physicians' prescriptions they escape the wholesome control of these agencies, and as shown by the exposures in *Nostrums and Quackery*, have been the frequent instruments of fraud, and the means of disseminating habit-forming drugs.

Bearing upon this method of marketing, the Commission has adopted the following declaration:

Methods of Marketing—The preparation must be one which is regularly offered to the public through the usual trade channels, i. e., through regular wholesale and retail dealers in ready-made medicines, and thus subject to inspection by the authorities charged with the enforcement of state food and drug laws.

Alcohol Content—The purposes for which alcohol may be legitimately used in a medicinal preparation are to extract and hold the active constituents of drugs in solution in permanently active condition, or to prevent fermentation, moulding, freezing or other spoilage.

Whether or not an alcoholic medicine can be made to serve as a substitute for a beverage alcoholic liquor depends upon the degree and character of the medication, or upon whether or not the degree of medication is sufficiently great to render it impossible to obtain sufficient alcohol to produce the characteristic stimulation of that compound without taking an overdose of the remaining constituents.

This excess of alcohol in proportion to the degree of medication may be the result of design with the intention of selling an alcoholic stimulant under the disguise of a medicine, or it may be due to the fact that the medicating substance naturally possesses such low activity that it is difficult to include sufficient of it in the solution to prevent the predominance of the alcoholic effect. The latter is the case with numerous undoubtedly legitimate official preparations, such as many of the spirits, elixirs, tinctures, essences, etc., some of which, although the attempt is made to reduce their alcoholic content to the lowest degree consistent with pharmaceutical requirements, yet are capable of serving more or less perfectly as alcoholic substitutes.

In view of the fact that alcohol is a rather expensive ingredient to use in proprietary medicines, it may be assumed that when such remedies are issued in good faith the alcoholic percentage will be as low as the pharmaceutical requirements of the particular combination will permit. Conversely, it seems fair to

assume that when the alcohol percentage of a mixture is far in excess of pharmaceutical requirements, it is for the express purpose of making a preparation that will serve as a substitute for beverage alcoholic liquors.

In considering this question, use was first made of the investigations of the U. S. Commissioner of Internal Revenue in connection with the collection of the tax upon the sale of alcoholic liquors at retail, the results of which are issued from time to time in the form of printed lists of alleged medicinal compounds which are deemed so strongly alcoholic in proportion to the degree of medication as to bring them fairly within the class of alcoholic beverages.

The revenue list examined was dated June 6, 1914, and contained 287 titles of such preparations, with the names and addresses of their manufacturers.

Upon comparing this list with two of the largest wholesale price lists of proprietary medicines, there was found after the elimination of duplicates, a total of 14 preparations named in the price lists which were also included in the revenue list. In other words, 14 preparations recognized as proprietary preparations by the publishers of price lists of such preparations are also recognized as excessively alcoholic by the Commissioner of Internal Revenue.

Examination of several drug stocks failed to show the presence of any of this class of preparations on sale, and inquiries addressed to several wholesale druggists brought the reply that the great majority of the preparations contained in the Revenue Department circular were practically unknown to the wholesale drug trade, and that it was believed that they were mostly sold through the saloon trade, or were preparations of local character devised to evade local prohibitory laws, and ordinances, and not offered for sale outside of the localities in which they originated.

The subject was next approached by the examination of the statements of alcoholic percentage taken from the labels of 1108 proprietary preparations issued by the leading manufacturers of this class of goods within the United States, and believed to fairly represent the average of patent medicines handled by retail druggists. As these statements are required by the Federal Food and Drugs Act, and by similar acts in most of the states, it was believed safe to rely upon their substantial correctness. While it is, of course, possible that some of these statements were not correct, it is not thought likely that there was a sufficient number of misstatements to introduce any material error into the final result.

Of the 1108 preparations considered, three hundred and eight, or 27.79 percent of the total number, were stated to contain alcohol in proportions ranging from 1 percent upward.

A study of the proportion of alcoholic to non-alcoholic preparations recognized by the United States Pharmacopœia and National Formulary, yields the following:

Total number of U. S. P. preparations, liquid and solid, of galenical character	427
Number of U. S. P. galenicals containing more than one percent of alcohol	206
Percent of U. S. P. galenicals containing alcohol	48.24

A similar study of the titles of the National Formulary (third edition), most of which are for preparations which can be denominated pharmaceuticals, presents the following:

Total number of N. F. preparations of galenical character	575
Total number of N. F. preparations containing alcohol	274
Percent of N. F. preparations containing alcohol	47.65

In enumerating the U. S. P. and N. F. galenicals, definite chemical compounds, vegetable drugs, the several forms of unmedicated alcohol, unmedicated spirits, and unmedicated wines were omitted as not properly coming within the term pharmaceutical preparations, and therefore not properly comparable with proprietary medicines. Certain other U. S. P. and N. F. preparations which contain only trifling quantities of alcohol, such as syrup of tolu, etc., were also omitted.

No preparations were considered as alcoholic if the alcohol is removed in the process of manufacture.

While the study of the general subject of alcohol in proprietary medicines has not proceeded sufficiently to warrant any extensive generalizations, and is therefore reserved for further study, the Commission at this time offers the following declaration:

Alcohol Content of Proprietary Medicines—If the preparation contains alcohol, it must be sufficiently medicated to prevent its use as an intoxicating beverage, and in addition to this requirement the proportion of alcohol present must not be greater than is properly necessary to hold in solution in permanently active condition the essential constituents of the preparation, and to protect the preparation against freezing, fermentation, or other deleterious change.

Content of Habit-Forming Narcotic Drugs—Using the same 1108 preparations studied for alcoholic content, a similar study was made of their content of narcotic, habit-forming drugs, the data being taken from the statements on the labels made in accordance with the requirements of federal and state laws.

One fact developed was that not one of the labels mentioned the presence of cocaine in any quantity, a condition rather unexpected in view of the frequently published statement that this alkaloid is a frequent constituent of patent medicines. While undoubtedly there were formerly proprietary remedies containing cocaine, and that there still may be some that have not come to the attention of the Commission, it is not probable that a sufficient number of such preparations exist to constitute a serious menace.

Extract of Cannabis Indica was mentioned in three of the 1108 preparations, two of the three being corn remedies which could not be used internally, and the third a cough remedy in which the accompanying medication is probably sufficient to render it unlikely that the preparation could be successfully used to produce the narcotic effects of the Cannabis without taking an overdose of the other ingredients.

No one of the 1108 preparations was stated to contain chloral in any proportion, though it is possible that further search may develop the existence of chloral-containing medicines which are advertised to the general public.

The preparations, presumably not intended for internal use, stated to contain opium or one of its alkaloids in some proportion were as follows:

Injections for Gonorrhea	2
Tooth-Ache Remedies	2
Liniments and Embrocations	5
Pile Remedies	8
Antiseptic Salve	1
Eye Salves and Eye Waters	10
Total	28

In the above preparations the narcotic content was in excess of two grains of opium, or of one-fourth grain of morphine to the ounce in twenty instances, and not in excess of these proportions in five instances.

Whether any of the above 28 preparations would be capable of use internally so as to produce the narcotic effect of opium without an overdose of the other constituents has not yet been given consideration by the Commission.

The preparations admittedly intended for internal use, containing opium or a derivative were as follows:

Asthma and Bronchitis Remedies	2
Soothing Powders and Teething Syrups	4
Diarrhœa Cordials and Cholera Morbus Remedies	12
Cough and Cold Cures	21
Tablet forms, mostly for cough	3
Total	44

Besides the above there were 15 preparations of miscellaneous character not easily classified with any of the preceding, which contained opium or one of its alkaloids.

Of the preparations plainly intended for internal use, seven contained opium in excess of two grains to the ounce, six of these being diarrhœa cordials, or cholera morbus remedies, in which the proportions ranged from 3 to 8 grains to the ounce, or materially less than the average opium content of the five diarrhœa mixtures of the National Formulary. The last one of these seven preparations was an asthma remedy, which was stated to contain 23⅓ grains of opium to the ounce.

The largest proportion of morphine or its sulphate in any preparation for internal use was 1 grain to the ounce. In one preparation the alkaloid present was codeine, in the proportion of 11/34 grain to the ounce of tablets.

Heroin was reported in one cough syrup in the proportion of 1/19 grain to the ounce.

In the majority of cases the proportions stated to be present did not exceed the quantities permitted by the Harrison Law, namely, 2 grains of opium, ¼ grain of morphine, 1 grain of codeine, or ⅛ grain of heroin to the ounce, and in many cases the proportions are considerably lower.

Of the four preparations for children's use which contained opiates, two contained 2 grains of opium, one contained 9/20 grain of opium, and one ¼ grain of morphine to the ounce.

It is perhaps only fair to state that the statements of narcotic content were compiled before the enactment of the Harrison Law, and it is probable that if the packages now being issued were to be examined it would be found that those intended for interstate commerce would comply with that act.

Whether or not opium or its alkaloids, or the narcotic derivatives of the latter can be dispensed in combination with other active non-narcotic drugs in such a way as to prevent the use of the combination from leading to a drug habit is a question which the Commission expressly reserves for further study.

As a provisional measure the Commission has adopted the following declarations:

Content of Habit-Forming Drug—If the preparation is one which is capable of being used internally, whether recommended for internal use or not, it must not contain cocaine, nor shall it contain opium or any of its alkaloids or their derivatives in greater proportions than those specified in Section Six of the Federal Law commonly known as the Harrison Act, and it shall also contain other active drugs in such proportion that the use of the preparation will not be likely to create a drug habit, nor satisfy such a habit when previously existing.

Remedies for Children's Use—If intended for administration to infants or children, the preparation must not contain cocaine, or opium or its alkaloids, or their derivatives, in any proportion whatever.

Of the remaining declarations, namely, those relating to the Activity of Proprietary Preparations, Immoral or Illegal Purposes, Incurable and Contagious Diseases, Conformity in Labeling to the Federal Food and Drugs Act, and to Advertising, the Commission deems them of such evident propriety that no commentary is needed, and therefore offers none.

The ten declarations provisionally adopted are as follows:

MINIMUM REQUIREMENTS WITH WHICH PROPRIETARY REMEDIES SHOULD COMPLY IN ORDER TO RENDER THEM SAFE FOR DIRECT SALE TO THE GENERAL PUBLIC.*

The following declarations are provisional, and subject to repeal, modification or expansion as the Commission may later decide.

(1) *Prescription Fakes, Concealment of Proprietary Character*—The preparation must not be named or advertised in such a way as to conceal its proprietary character and lead the purchaser to believe that it is a simple chemical or vegetable drug ordinarily purchasable in small quantities instead of a proprietary mixture or substance.

(2) *Methods of Marketing*—The preparation must be one which is regularly offered to the public through the usual trade channels, i. e., through regular wholesale and retail dealers in ready-made medicines, and thus subject to inspection by the authorities charged with the enforcement of state food and drug laws.

(3) *Alcohol Content*—If the preparation contains alcohol, it must be sufficiently medicated to prevent its use as an intoxicating beverage, and in addition to this requirement, the proportion of alcohol present must not be greater than is properly necessary to hold in solution in permanently active condition the

* Approved by the Council of the American Pharmaceutical Association, San Francisco, August 10, 1915.

essential constituents of the preparation, and to protect the preparation against freezing, fermentation, or other deleterious change.

(4) *Content of Habit-Forming Narcotic Drugs*—If the preparation is one which is capable of being used internally, whether recommended for internal use or not, it must not contain cocaine, nor shall it contain opium or any of its alkaloids or their derivatives, in greater proportions than those specified in Section Six of the Federal Law commonly known as the Harrison Act, and it shall also contain other active drugs in such proportion that the use of the preparation will not be likely to create a drug-habit, nor satisfy such a habit when previously existing.

(5) *Remedies for Children's Use*—If intended for administration to infants or children, the preparation must not contain cocaine, or opium or its alkaloids, or their derivatives in any proportion whatever.

(6) *Activity of the Preparation, Cautions Against Misuse*—The preparation must be of such character that it will not be liable to endanger life or health when used in accordance with the accompanying instructions, and if the preparation is one which is liable to occasion injury when improperly used or when used to excess, the accompanying literature must bear instructions tending to guard against such improper or excessive use.

(7) *Immoral or Illegal Purposes*—The preparation must not be intended for use as an abortifacient nor for use for any other immoral or illegal purpose, nor must it be advertised or recommended either directly or indirectly as an abortifacient or for any immoral or illegal purposes.

(8) *Incurable and Contagious Diseases*—The preparation must not be advertised or recommended as a cure for diseases or conditions which are generally recognized as incurable by the simple administration of drugs, or for the cure of contagious or acute diseases the treatment of which properly requires the supervision of a qualified medical attendant.

(9) *Conformity to the Federal Food and Drugs Act.*—Neither the label on the package nor any of the accompanying literature shall bear or contain any statement in conflict with the misbranding provisions of the Federal Food and Drugs Act.

(10) *Advertising Not Accompanying the Package*—Advertising not accompanying the package shall conform substantially to the statements on the label, carton, or in the accompanying circulars as to the origin, composition or character of the preparation, or concerning its curative or remedial value.

THE QUESTIONS OF SECRECY AND EXHIBITION OF FORMULAE.

One of the most common characteristics of the non-ethical proprietaries known as patent medicines is the secrecy of their composition, though, as previously stated, the open publication of the formula is not sufficient to place a preparation in the ethical class if it is openly offered for sale to the general public.

The question of secrecy is by far the most delicate and difficult one with which the Commission has to deal, and although considerable thought has been devoted to the subject no conclusion has been reached.

Which of the various propositions that have been offered for the regulation of secrecy, or whether any of them would be effective and practicable, are much disputed questions, and it would require an extended treatise to even partially summarize the opposing arguments.

Far too many alleged reforms consist merely in the substitution of a set of new

evils for an old one, and not infrequently we later discover that the exchange has been unprofitable.

It is the hope of the Commission to consider the subject of secrecy in patent medicines with such thorough deliberation that any policy it may propose will not be likely to lead to conditions worse than those sought to be cured.

Respectfully submitted,

CHARLES CASPARI, JR.,
THOMAS F. MAIN,
JOHN C. WALLACE,
MARTIN I. WILBERT,
JAMES H. BEAL, Chairman,
Commission on Proprietary Medicines.



R. S. LEHMAN, New York
Chairman of Section on Education and Legislation



JOSEPH WEINSTEIN, New York
Chairman of Section on Practical Pharmacy and Dispensing

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-Third Annual Convention

MINUTES OF THE FIRST SESSION.*

The Section on Practical Pharmacy and Dispensing was called to order at 2 o'clock p. m. in the Gold Room of the Bellevue Hotel, San Francisco, Chairman Cornelius Osseward presiding and R. W. Linton, Secretary pro tem.

Mr. Osseward: The Section on Practical Pharmacy and Dispensing will now come to order, please. Will Dr. Joseph Weinstein take the chair while I read my address.

THE CHAIRMAN'S ADDRESS.

Fellow Members: According to our by-laws the Chairman of each Section shall preside at each of its sessions, and shall prepare a short address treating upon the subjects connected with his Section, to be read before the Section at the annual meeting.

I am extremely grateful that the by-laws specify a short address, for such were my intentions when I first began thinking about it, all the more because the time given for this Section will be needed for the work before us.

Experience and observation during the time as Secretary of this Section last year and as your Chairman this year, has convinced me that a change should be made in the method of soliciting papers for this Section.

Past officers of this Section who have worked under this same method will admit the difficulties and shortcomings, the waste of time and money, under this method now in use. As the work of this Section has mainly to do with the improvement of things practical, it seems to me not out of place to call attention to this method which so far has proven impractical, and devise ways which will produce better results.

I find that under the present method in use about eighty percent of the letters mailed to members of the Association, asking for papers for this Section, are never answered or even acknowledged, which means that eighty percent of the work of the Chairman as far as papers are concerned is wasted or without results to the Section.

Of the remaining twenty percent there are fifteen percent who wish to be excused, which leaves five percent net gain to the Section.

You will agree with me that this is not a very good showing, that we should obtain better results with the amount of time and money spent, by trying some other method in order to put this business of obtaining papers for this Section on a reliable and practical basis.

As a suggestion in obtaining this object your Chairman recommends the following:

That a committee be appointed, the members of this committee to be of those who have served as officers of this Section; the duty of this committee to be the selection or appointment of a certain number to furnish papers for our next meeting.

This would at least give your Chairman a nucleus, and any other papers obtained by the Chairman direct would be so much more gained.

* Discussions will accompany papers and are therefore omitted from the minutes.

It may be the means of inducing those members who have never contributed papers, but who are capable and can draw upon good and valuable material gained by experience to become regular contributors to this Section.

In connection with this suggestion another subject might probably be handled by this committee.

The selection of timely topics on which papers are desired might probably be taken up by this committee.

If some such method could be worked out your next Chairman would be able to comply with a recent ruling of the Council which requires of the Chairman to have all papers in the hands of the General Secretary at least one month before the date of the annual meeting. Another advantage would obtain, which would give us the maximum result with the least expenditure of time, if these papers could be in the hands of the General Secretary one or even two months before the date of the annual meeting; then these papers could be printed, a certain number of members selected to study these papers and be prepared to discuss them at the annual meeting.

As you all know this Section includes the former Section on Pharmacopœias, Formularies and Standards, this no doubt will take up part of the time formerly given to this Section only, without any additional time given to this Section, and it is therefore of the greatest importance that our time is properly taken care of.

This Section has done splendid work in the past, the papers read have been of much assistance to many of us in our daily work at the prescription counter and manufacturing desk.

There is one feature which I think might be taken up in this Section, one in which every pharmacist is vitally interested and which would create still further interest in the work of this Section.

Suppose, if in addition to the papers on dispensing and manufacturing we could have some papers on improved methods in conducting the drug and dispensing departments from a financial standpoint.

Is it not true that a great number of pharmacists are in need of more up-to-date methods and would welcome such assistance coming through this Section, resulting in better and more profitable drug and prescription departments?

Who for instance is more interested and concerned in an economical and at the same time efficient and quick delivery system?

Is it not the prescription department? Would it not be possible for this Section to bring out enough new ideas which might be the means of greatly improving this difficult problem.

Short-cuts in the prescription department (saving time means cutting down expenses).

Improved arrangement of the prescription department (quicker service and concentration of space means saving of time and rental).

A record kept on freight and express charges, also cartage in your drug and prescription department might be the means of proving to many that considerable money may be saved by keeping the manufacturing counter busy.

These and many other problems which belong to the practical side of pharmacy, practical because they spell success financially and are just as important to discuss before this Section as are the improved methods of dispensing and manufacturing.

If this Section could by this means bring out methods showing how to make the prescription department more successful financially, a still greater amount of enthusiasm and success would result to this Section.

Mr. Weinstein: Gentlemen, you have heard the reading of the valuable address of the Chairman of this Section. What is your pleasure?

That address has also some recommendations. When I was an officer of this Section some years ago, I learned what the difficulties were in obtaining papers

from members. If those recommendations made by the Chairman could be carried out in some way, much good would come from them.

Mr. Hynson: The paper has been read before a small body, and every one is interested in it, and it seems to me that the Chairman might bring out the special points for action, and then we could dispose of it better than by referring it to a committee. I make the suggestion that the Chairman bring out the points to us at this time, and let us take action. I think more satisfactory results will be obtained.

Mr. Weinstein: I will entertain a motion as to what disposition to make of the address, and then the Chairman can conduct the meeting.

Mr. Hynson: I move that it take the ordinary course, that is, go to the Publication Committee, and that the Chairman be requested to bring out the points seriatim on which he would like action taken at this time.

Mr. Nitardy: I second the motion.

(The motion was put and carried.)

Mr. Osseward: The recommendations I would call attention to are these: I have had difficulty in obtaining papers for this Section. Papers are obtained under difficulty, and our method has proved impracticable. It has worked out for several years the same way, and looking through the proceedings I find that each and every chairman has had the same trouble. It is very difficult to get enough papers to make a successful meeting. About eighty percent of the letters mailed to members of the Association, asking for papers for this Section, are never answered. Of the remaining twenty percent, about fifteen percent send in some excuse or other, leaving five percent to do the work of getting up the papers.

Mr. Hynson: What is your recommendation on that subject?

Mr. Osseward: My recommendation is this, that a committee be appointed at the opening of the session, the members of this committee to be those who have served as officers in previous years of the Section, because they know the duties, and they know the shortcomings of the members, the duty of this committee to be the selection or appointment of a certain number of members of this Association to furnish papers for the next meeting.

Mr. Hynson: I move the adoption of this suggestion. It is unique anyway and worthy of trial.

(Motion seconded.)

Dr. Weinstein: Is it understood that it should be done?

Mr. Osseward: I suggest it to be done right after the President's address, because the committee will have time then to select their men and report at the next meeting, and then everybody will know from whom a paper is expected. It will save the Chairman twelve months of work, and he can use that time in getting other matters in shape, and he can concentrate his efforts without worrying as to whether there will be any papers for the next meeting.

Mr. Hynson: All that anybody can get is promises, but I think it would be worth trying.

Mr. Osseward: I think it would be better if it came from a committee than from one individual. I think there is a great deal more behind it.

Mr. Weinstein: Was the motion seconded?

(The motion was again seconded.)

(Motion put and carried.)

Mr. Weinstein: The motion does not specify how many members the committee will be composed of, but I suppose that is left to the Chairman.

Mr. Weinstein: Is there any other suggestion in reference to the Chairman's address? If not, the Chairman will please take the Chair.

(Mr. Osseward then took the chair and presided.)

Mr. Osseward: The first paper on the program is by Mr. Wilbur L. Scoville on "Some Experiments in Filtration."

The paper was discussed and referred for publication. A motion was made by Mr. Lichthardt that the Scientific Section be requested to take up the subject of absorption in filtration for next meeting—Carried.

The title of the next paper was: "The Pharmacopœia as an Educational Problem for the Practical Pharmacists" by Joseph Weinstein.

Considerable discussion was participated in and the paper referred for publication; that portion particularly bearing upon a college course for older pharmacists was, on motion, referred to the American Conference of Pharmaceutical Faculties.

The next paper on Apparatus for Filling Soft Capsules, by Leon Lascoff, was presented by Mr. C. A. Mayo and its workings demonstrated. After considerable discussion, in which many practical related points were brought out, the paper was referred for publication.

The next paper on the program was by H. W. Weed, entitled, The Prescription Department as to Arrangement, Efficiency, etc. After discussion the same was referred for publication.

Chairman Osseward: I would like to hear from the Chairman of the Committee, appointed last year, on the paper by Professor H. V. Arny, relating to Certified Prescriptionists. Professor Hynson is Chairman of that Committee.

Mr. Hynson: Mr. Chairman, ladies and gentlemen: Dr. Arny read a paper before this Section last year which created a great deal of interest and it appears in the current number of the Druggists Circular, in regard to the formation of an *American Institute of Prescriptionists,* and the paper after being thoroughly discussed was referred to a committee, and as Chairman, I have brought in this report:

To the Officers and Members of the Section on Practical Pharmacy and Dispensing:

Gentlemen: Your committee has found Doctor Arny's paper an exceedingly interesting study. It presents thoughts and suggestions which form a nucleus, through the growth of which will come much help to the proper placement of Pharmacia vera. The paper and its suggestions are therefore heartily commended to all those who are earnestly striving to make pharmaceutical practice more useful and who are trying to give it better relative standing amidst the vocations of the times.

The chief purpose of this committee seems to be to recommend to this Section and through it to the Association advisable action upon the suggestions of Doctor Arny regarding the formation of a body of distinctive pharmacists within its own limits as comprehensive as these may be. This committee does not believe that the American Pharmaceutical Association in view of its remarkably diversified membership characteristics, can seek or encourage such an organization as proposed by Doctor Arny. Your committee deems it more consistent to advise that every possible effort be made to so improve the general con-

ditions in and surrounding pharmacy as to make such an "institute" as proposed, unnecessary.

In connection with the proposition under consideration and the long discussed relationship that the practice of pharmacy bears to commerce, it is well to note the remarkable growth of scientific trading. Commerce has most encouragingly invited the application of a number of the older sciences to its service and has opened numerous new channels of profitable scientific investigation. All of which is giving to trade or commerce a continuously increasing relatively better standing in the vocations of men. Both professions and trades are becoming more and more scientific and this is fast making *true science* the standard by which all occupations are compared, both as regards their usefulness and their relative social importance.

Even a restricted or conservative view of the future's yieldings will show that the final just placement of pharmacy will not come from its separation from trade, for that is impossible. It will much more likely win the respect it deserves because of the more scientific, more ethical and if you please, *more aesthetic* development of the trade practiced with which it must necessarily be connected and, if this promise is true, it would seem to be our duty, not to elevate our noses at our trade relationships, but, rather, to exert ourselves to improve Pharmacy's natural and inseparable environments; that is, make pharmaceutical *trading more scientific,* MORE ETHICAL, MORE AESTHETIC.

Respectfully submitted,

H. P. HYNSON, Chairman.

Mr. Osseward: You have heard the report of the committee. What is your pleasure? Are there any remarks?

Dr. Arny: Mr. Chairman, I move it be received, and in making the motion I would like to discuss it a minute.

Mr. Nitardy: I second the motion.

Dr. Arny: I wish to say, while I have not consulted with Dr. Hynson, he has just the idea that I have. My idea in writing the paper last year was to set some of the people to thinking. I think when that happy day comes that Dr. Hynson speaks of, the education of pharmacists will be such that this question of education versus commercialism will not obtain.

I might say that in the recent number of the Druggists' Circular, Professor Jordan, one of our members, gave a very thoughtful paper *on the divorce proceedings between commercial and professional pharmacy.* We asked some of our friends to comment upon it—Doctor Hynson is one of them—and it makes as remarkable a contribution as can be imagined, and it makes a remarkable combination. The concensus of this debate was exactly what Dr. Hynson brings out, that at the present moment there is no possibility of a divorce between commercial and professional pharmacy.

(The motion was put and carried.)

Mr. Osseward: As you all know, the former Section on Pharmacopœias and Formularies has been incorporated with this Section, and a committee was appointed last year, according to instructions, to take up that subject. I appointed my committee but have heard nothing from them, and I was under the impression that probably they had sent a report to the General Secretary, which was not done. So there will be no report from that committee, as far as I can see, unless it comes in today or tomorrow morning; but we have Professor Remington with us, who will give us some information on the new Pharmacopœia. I believe it would be a good time just now to take it up, as Professor Remington is ready to do so.

Mr. Remington: Mr. Chairman—I am very glad to report the progress of the work on the new United States Pharmacopœia. No one regrets more than I the necessity for patient waiting on the part of the United States pharmacists, chemists, doctors, and all who use the Pharmacopœia.

The present cause of the delay is due to the European war. And you may wonder why the sad affairs that are taking place on the other side of the water should affect the Pharmacopœia.

This is the first pharmacopœia in the world which is being revised on the publicity plan. The publicity plan is that all changes of standards from the old Pharmacopœia which have been adopted by the new Pharmacopœia must be published and given out, so that manufacturers and others who use the Pharmacopœia may have an opportunity of criticising it, correcting it or amending it before the actual book is sent out and bound for the public.

Two years ago I was at The Hague at the Pharmaceutical Congress there, and in some way this resolution of the Convention became known to the representatives of the foreign pharmacopœias. And I remember very well that Professor Tschirch, of Berne, expressed in a few words his idea of this way of getting out a pharmacopœia. I had to explain the method, that we were going to publish it in advance to the world, so that they could see all the changes that were going to be made in it. He said, "We never could do that in my country." And various members got up, representing the various countries, and they were astonished, and they classed it as one of those Yankee ideas that they get over on the other side of the water which are very good. (Applause.)

And it is quite probable, I think quite possible, that many of the foreign pharmacopœias will follow that idea.

Of course, you all see the utility of publication and publicity. Here is a large wholesale manufacturer, wholesale druggist, or even retail druggist, who is given ample opportunity to know what is coming, so that he will not make a great lot of preparations which will be dead stock for him.

Then, again, the United States Pharmacopœia is now the law of the land. It is a law book; it was not at the last meeting. It is now a law book, and it is necessary to cover every possible objection that there might be.

Again, in regard to publicity, it was objected at the time that some one—some chemical manufacturer—that will illustrate it better—some chemical manufacturer would get some patented or secret methods of making or purifying some chemical product. Well, he would present that to the Committee of Revision and expect to have his own particular pet incorporated in the pharmacopœia at the expense of his competitor. Well, I want to say that this publicity has been in operation now for two or three years. Every proposition to amend is put before the committee. We have the committee on organic chemicals and the committee on inorganic chemicals, and the committee on fifteen different branches of the work. Any suggestion or amendment or correction must go before that sub-committee. Now, some of the members of the sub-committee are manufacturers themselves. And any one manufacturer attempting to get any special advantage over the other, is aware of the fact that his critics or competitors will be right after him. If they don't hear it at a meeting of the committee, they will see the proposition in print. So that co-operation in all branches of pharmacy interested in the Pharmacopœia has in this way been secured.

Again, if a manufacturer finds something in the Pharmacopœia after it is issued that he don't like, we can say to him, "Why don't you read the Journal? It was all published, and now if you find some fault with it, it is your own negligence."

This has entailed a great lot of work, but I think it is going to tend very largely to make the Pharmacopœia as perfect as possible.

The delay now has been caused, I said, by the European war, because a resolution was passed in the Committee of Revision that where a substance was up for

admission in the Pharmacopœia, that if it was protected in any way by proprietary rights, patents, trademarks, copyrights, and so on, that if the doctors on the committee who had charge of the introduction of the article into the Pharmacopœia—what we call a Commitee on Scope—it should be first referred to them. If the physicians on the committee agreed that it was important enough and good enough to put into the Pharmacopœia, if it was a protected article, that the manufacturer should be notified that it was the intention to introduce this article, but the committee must have the approval of the man who owns it. The laws recognize the fact—the patent laws have given him a patent, and those rights he has acquired in a legal way. Consequently, you need not expect to find in the Pharmacopœia some of the well-known synthetics. There are certain things in there which are well known which would have been admitted to the Pharmacopœia, but you will understand that the Committee of Revision have conferred with the manufacturer and he declined to have it go in the Pharmacopœia. Naturally they are not in business for love, but they are in business to protect their own interests.

And we find that wherever a chemical substance—I say chemical substance, but wherever a patent is about to expire, the tendency on the part of the manufacturer is to say, "Yes, I would like to have it in the Pharmacopœia, because our rights expire in a few months." And, of course, it is a big advertisement for them to continue the sale and use of that article, because we have adopted it and put it in. But where the patent has eight years to run, the manufacturer says, "No, we would rather you would not put it in." The reason is because it would show others and they could make that preparation under a chemical name.

An illustration of this is aspirin. We applied to the Farbenfabriken Company to put in aspirin. The rights on aspirin were about to run out, and, of course, we thought that probably they would be willing. While that was going on, a suit was started in Holland on this subject, and a firm there had introduced aspirin under the name of acetyl salicylic acid, its chemical name.

I arrived at the hotel in Rotterdam and I needed some aspirin to quiet my nerves, and so I went around the corner to a drug store and found there a young woman in charge—one of the pretty Dutch girls, with blonde hair, and I said, "I want some aspirin."

I would say incidentally that in every drug store in Rotterdam and Amsterdam and throughout Holland you would always find a girl there, and they astonished me when we had a report in the Congress as to the practice of pharmacy throughout Europe, the number of women who are engaged in pharmacy—a far larger number than there are in this country in proportion.

And she said, "Probably you would like to have aspirin, but I can give you something here which is much cheaper." And I said, "Is it just as good as aspirin?" (Laughter.) And she went immediately to the case and brought me out acetyl salicylic acid put up in bottles, twenty tablets in a bottle. There was not a word on it like aspirin, but it said acetyl salicylic acid.

I said, "Certainly. How many have you there?" She said, "I have three left, ten cents apiece." My exchequer would stand that, so I got all three. I have two of those at home that I can show you to let you see what is going on.

After that time I saw a decision from the highest court in Holland where the Farbenfabriken Company had sued this manufacturer of the so-called acetyl salicylic acid. It was not put up in imitation at all. In large letters it said, "Acetyl salicylic acid," and there was no attempt to indicate that it was anything else.

I mention this to show how the courts are likely to rule in these cases. The court heard the evidence on both sides. This manufacturer of acetyl salicylic acid had made a good product. There was no room on the part of anyone to doubt that it was aspirin absolutely. There was nothing else in it. It was pure

acetyl salicylic acid, which is what the manufacturers claim for aspirin. But the judge took the view that that was intended as a substitute for aspirin. Now in addition to that, the foreign Pharmacopœia had introduced acetyl salicylic acid in the book, and the judge simply tore out that. He said, "That makes no difference. This man that is making acetyl salicylic is defrauding the aspirin people of their profit on it."

These judges look at the thing solely from the right of the individual, and if there is any legal right, the patent is secure, and there is no flaw about the patent, they simply say they don't care anything about the Pharmacopœia, whether it is in there or not, this man got the Revision Committee to put it in there, that is all, but it don't alter the right of the thing; and, Mr. President, this firm had to render an account of every bottle of that acetyl salicylic acid that they had sold, and then they were mulcted in damages, because, as the judge saw it, it was interfering with the rights of the Farbenfabriken Company. So the Pharmacopœial Committee, through a resolution which was passed, requested or asked the Committee of Revision, the Chairman of the Committee of Revision, to write to the manufacturers of such products that are accepted by the physicians and see if they would allow the Pharmacopœia to adopt them and put them in the Pharmacopœia under chemical names and thus use them.

Well, that correspondence has taken a good deal of time. We thought everything was going swimmingly. I fully expected to have the Pharmacopœia out in October, but the war came on and the New York agent and the agents in this country were appealed to. They universally said, "We appreciate your courtesy, and we will be glad to help you, and we will forward to the main houses and manufacturers in Germany your request." Naturally they had to refer it to the firm or corporation itself.

Now, we have just received the answers from these firms, and the important ones all say very politely and courteously, "If it is all the same to you, we don't want our products in the Pharmacopœia."

So you will find some of them not there, but you will find a good number of these synthetics in there. And that is what is now keeping us back. But we are getting along. Here, Mr. President, is the Pharmacopœia as far as we have it in print. In the back part the tables are all done, and there is nothing now to do but to go ahead with the proof, and here are the first twenty-five pages which have just been taken off since I have been out here—there will be fifty more soon—we are going ahead, and this is the way the new United States Pharmacopœia will look—the type and arrangement of it. I have copies of these that I will pass around.

Now, I will answer any question, Mr. Chairman.

Mr. Osseward: Any questions you would like to ask Professor Remington?

Mr. Remington: Another thing. Everybody has asked when will it be out. We hope to give you a New Year's present.

Mr. Nitardy: I would like to ask Professor Remington the question as to what will be the status of such drugs as are included in the Pharmacopœia under new names that are still under a patent right that has not expired, such as you mentioned would soon expire.

Mr. Remington: The Pharmacopœia has always occupied this position, that it is not a book which is intended to advertise any man's product, and we don't propose to use trional or sulphonal or adrenalin or any of those names which are popular, because we cannot do it. But after a thing has been before the public 14 years and the patent has run out, and it is still used and the patent is invalid, of course it can be adopted; but we don't put in anything that is not an authentic

chemical entity. It goes in, however, under its chemical name, and then we don't expect the manufacturer is going to kick. But if he says, "No, I won't have it," what is the use of having twenty or thirty lawsuits just for putting something in that a doctor can get anyway?

Mr. Nitardy: That was not what I was trying to get at. I was going to ask if this permission to put a copyrighted article in the Pharmacopœia under a chemical title would give a consent on the part of the owner of that copyright that that product might be put on the market.

Mr. Remington: Certainly. I see your point. You want to know whether any manufacturer could make such an article as acetyl salicylic acid under that name without calling it aspirin?

Mr. Nitardy: Yes.

Mr. Remington: Yes, certainly he could, and that is what the whole fight is about. As I tried to say before, take aspirin ten years ago—a valuable medicine it has proved to be—why, they would certainly enter suit against the Pharmacopœia at once if we were to describe something there as aspirin, just use their name; their copyright protects them in their trademark or whatever it is. You cannot use the word "aspirin" just exactly as you cannot use adrenalin today. It is all tied up. We cannot put adrenalin in the Pharmacopœia. It was proposed to put it in under the name of liquor epinephrin, but epinephrin is not a commercial product. That is the name given to it by Johns Hopkins University. It has all been settled by the courts. Parke, Davis & Company, went to the British Pharmacopœia, and they said to Doctor Tirard, "Yes, we want that in there." They said, "Under what name?" Parke, Davis said 'As adrenalin—nothing else. We won't give you permission to put it in the British Pharmacopœia unless you use 'adrenalin' and that has got to be the thing."

Mr. Weinstein: I want to ask a question. Assuming that the Pharmacopœia will be out at New Year's, how much time will then be allowed before it goes into effect?

Mr. Remington: I think about three months.

Mr. Weinstein: Not six months the way we have done?

Mr. Remington: I don't know yet.

Mr. Weinstein: We want to know what stock to put in.

Mr. Remington: I would say, Mr. President, that in addition to publicity, which I have spoken of here, so the druggists won't stock up with thousands of pounds of things that might not be right when the new Pharmacopœia comes out,—that is the first danger signal—that is why we published it. Now, the manufacturer knows about that and he is not going to be foolish enough to go ahead on the old Pharmacopœia and lay in a big lot of stock. But in addition to that there will be printed on the first page of the Pharmacopœia, the title page, "Official after March 1st, or April 1st, or June 1st, or whatever may be decided.

Mr. Weinstein: At least three months?

Mr. Remington: At least three months, and it may be six months before the new pharmacopœia will be in effect. By that time you can sell present pharmacopœial preparations, but you will not be held up until after the date mentioned on the title page that it is to go into effect.

Mr. Weinstein: Especially is it important in the sale of retail drugs. We had

trouble with tincture of aconite and things like that. We didn't know how long it would take.

Mr. Osseward: Are there any other questions? We are much obliged to Professor Remington for giving us this information, in view of the fact that the Committee on Pharmacopœias has not yet reported. I am extremely glad that we have heard these remarks.

Mr. Nitardy: Mr. Chairman, I would like to ask another question of Professor Remington. Is there at present a sort of compilation of changes in the new Pharmacopœia that has been published by the committee that is available.

Mr. Remington: It is all in the Journal of the American Pharmaceutical Association.

Mr. Nitardy: This month?

Mr. Remington: No. It has been going for six months.

Mr. Nitardy: I meant a concise showing.

Mr. Remington: No.

Mr. Nitardy: I had hoped that there was such a thing.

Mr. Remington: That would not be a good business move. I know one dear old member of the Philadelphia College of Pharmacy. He came up to me once with a brilliant idea. He said, "Now why do you get out these editions of this book?" He says, "Why don't you put them all on pages, all the changes that you make, and sell them for ten cents or fifteen cents, or twenty-five cents, so these could be pasted in the books and the old editions used?" Well, the answer I made was that my publishers would not permit me to do so.

Mr. Osseward: The next paper on the program will be by Mr. Lichthardt on "Some Laboratory Notes."

Mr. Lichthardt: This paper is short. It deals with tests I made five years ago this month, and I noticed a couple of years ago some writer in the Government service had stated that they found it to be extremely reliable, and it pleased me very much. I had not heard from my caramel test up to that time, although I had received some letters from experimenters and others. This little paper takes up that matter, and also on the subject of necessity of being careful when you are doing your testing.

After discussion the paper was referred for publication.

Mr. Osseward: I have two papers which have been referred from the Council to this Section. One is from Chairman Beringer, on behalf of the Committee on Standards for Unofficial Drugs and Chemical Products. I suppose these really ought to be taken up so they can be disposed of or returned to the Council or to the Secretary. Then I have another one by Otto Raubenheimer, who is Chairman on the Section on Pharmacopœias and Formularies. What is your pleasure? Shall we take those up now?

Mr. Mayo: I believe they are merely intended for publication. If you have ample time, the members might like to have them read, but unless you do have ample time, it does not do very much good to read a formula. I presume they are formulas.

Mr. Osseward: No, they are just reports from the chairman of the committee.

Dr. Arny: I think both of them are very important reports and we should hear them.

Mr. Mayo: I move they be read.

(Motion seconded, put and carried.)

REPORT OF COMMITTEE ON RECIPE BOOK

This first Committee on Recipe Book was appointed in 1910 and presented its report to the Council on May 8th, 1911, which was published in the Journal A. Ph. A., Vol. I, p. 168, and which should be of interest to every pharmacist. This Report dealt with the following subdivisions:

(1) Advisability of publication
(2) Scope of character
(3) Plans and details of publication.

As a result of the work of that Committee 114 formulas were published in installments in the Journal A. Ph. A. for 1912 in the department of "Pharmaceutical Formulas," created for that purpose.

Much has been said "pro and con" the work of such a committee and "pro and con" the publication of such a "Recipe Book" by the A. Ph. A. That such a book is needed and needed badly is the unanimous opinion of all practical dispensing pharmacists.

Your Chairman on numerous occasions has called attention to the necessity of a compilation of reliable formulas, formulas which are hard to find or which cannot be found f. i. the one of "Lotio Alba" (see Journal A. Ph. A., Vol. III, p. 692.) Willingly your Chairman has acted as a National, in fact, an International Information Bureau on matters pharmaceutical and quite especially on formulas. Lately again, I have had numerous inquiries by 'phone and mail, for the formula of *Tinctura Ferri Acetica Aetherea,* which has been brought back to life by being prescribed by physicians in the United States. But where, Oh! where, can you find a formula for same? None of the Dispensatories and none of the many Formularies give a recipe for this preparation. The nomenclature evidently betrays a foreign and quite especially a German origin. "Made in Germany" is true of this preparation! Was it not the Berlin apothecary and founder of the "mineral chemistry," Martin Heinrich Klaproth (1743-1817) who introduced in 1801 Liquor Ferri Acetici and Tinctura Ferri Acetica Aetherea into the Pharmacopoea Borussica? However, the last or 5th edition of the Deutsche Arzneibuch does not contain such a preparation, and the same is true of the fourth edition. But the 3d edition of the Arzneibuch provides a formula for the so-called Klaproth's Tinctura Martis.

Just think of it! This tincture is again rejuvenated in 1915, far away from its "Fatherland." Truly a verification of the words of Horace, which were also placed on the front page of the first and most important and legal dispensatory of Valerius Cordus, published as early as 1564:

Multa Renascentur, quae jam Cecidere;
Cadentque, quae nunc sunt in Honore.

(Many things shall be brought to life, which have fallen,
And many things which now are honored, shall fall.)

FATE OF THE A. PH. A. RECIPE BOOK.

What is to be the fate of the Recipe Book? This is one of the pertinent questions of today in the Association. Is it to die a natural death? Is this wish of the pessimists to be fulfilled? It surely will be if no different arrangements are made. Permit me to point out some of the faults of this Committee and allow me to make a recommendation to the Council. The chief fault is that there is a different committee appointed by the President each year. This was done this year, for instance, in the early summer of 1915. You can readily see that before the committee has a chance to become acquainted and to get to work and *do something,* the annual convention is at hand and a report has to be submitted. This is what I call "dying a natural death!"

Now as to the remedy, which is very simple indeed! Let the Council appoint a *standing* Committee on Recipe Book, to consist of a chairman and a certain number of members, f. i. fourteen. The reason why I recommend 14 members, besides the chairman, is that according to the original idea of the Committee on Recipe Book, this work is to be divided into 7 different parts and each part should be compiled by 2 pharmacists, who are experts in this particular line. This is my recommendation and I hope the council will act on it at the San Francisco Convention.

"To be or not to be an A. Ph. A. Recipe Book" is a most important and vital question, which should be decided without further delay! Far be it from the writer to look for the chairmanship of this important *standing* committee, as I would much rather prefer to act as referee on foreign formulas, which subject I have made a special study for some time.

Placed on a sound basis and with a *Standing Committee* the A. Ph. A. Recipe Book will soon be forthcoming, after being published in installments in the Journal, and will be an everlasting credit to the A. Ph. A., *the* Association which is foremost in pharmacy throughout the entire world!

Respectfully Submitted,

OTTO RAUBENHEIMER, Chairman.

Dr. Arny: I move that the report be received and that the recommendation be forwarded to the Council with our recommendation.

(Motion seconded, put and carried.)

Mr. Osseward: The other report is by George M. Beringer and was referred to the Council.

Mr. Osseward: I have one long paper here, "A Few Good Toilet Preparations," by H. S. Groat. If you wish to continue—it is 20 minutes after 5 and we have to nominate officers, I suppose at this session. I still have another paper besides that.

Dr. Arny: This paper was prepared by my assistant, Doctor Hostmann, at my suggestion, and I would like to read it. The subject is, "The Miscibility of Ichthyol." Both papers were discussed and referred for publication.

Mr. Osseward: Mr. Latham promised a paper on "Plasters," but I have not received it. Another by Mr. Roemer of White Plains, N. Y. (This paper has since been received.—Ed.)

Mr. Osseward: Now, then, the nomination of officers for this Section is in order.

The following names were placed in nomination: For Chairman, Joseph Weinstein; for Secretary, H. B. Se Cheverell; for Associate, Frank Berg.

Mr. Mayo: I move you that we adjourn for three minutes as the officers must be elected at a separate session.

Dr. Arny: I second the motion.

(The motion was put and carried and the meeting adjourned at 5:57 P. M.)

SECOND SESSION.

Mr. Osseward: (AFTER RECESS) The meeting will come to order.

Mr. Mayo: I move we proceed to the election of officers.

Mr. Osseward: The Section has nominated Dr. Weinstein, of New York, for Chairman of our Section for the next year.

Dr. Arny: I move the Secretary be requested to cast the ballot for Doctor Weinstein.

(The motion was seconded, put and carried, and the Secretary cast the ballot.)

Mr. Mayo: I move that the Secretary cast the ballot for Mr. Se Cheverell for Secretary.

(The motion was seconded, put and carried, and the Secretary cast the ballot.)

Mr. Se Cheverell: I make the same motion as to Mr. Berg for Associate.

(The motion was seconded, put and carried, and the Secretary cast the ballot.)

Mr. Fletcher: I move we adjourn.

Mr. Mayo: Before we adjourn, we should present the new officers. It affords me pleasure to present Dr. Weinstein, a man who represents true pharmacy, and who is a very pillar of pharmacy in the State of New York. Gentlemen, whenever we find pharmaceutical gatherings, Doctor Weinstein is there. He has a large coterie of friends in the New York retail drug business. Dr. Weinstein has been a worker in pharmacy and for pharmacy for a great many years. I have pleasure in introducing Doctor Weinstein, the new Chairman.

Mr. Osseward: Doctor Weinstein, it gives me pleasure to give you the Chair, and I can only say that I will be pleased to assist you in every way I can to make the session next year a good one.

Doctor Weinstein: Gentlemen, I almost lost my breath at hearing that great introduction delivered by your worthy President. I don't know whether I deserve all that praise, but I will try to do something next year and try and select the right men to assist me. I promise you I will do the best in my power.

Mr. Mayo: The mere fact that a man is young is no bar to his usefulness. Mr. Se Cheverell referred to the fact that he was young in the Association. It is a fact that we have young men in the Association, and they have been of great assistance to us. We have had good young men from Denver. Nitardy was one of the best officers we have had in this Section. Mr. Se Cheverell is a young man, and I have great pleasure in introducing him as your new Secretary.

Mr. Se Cheverell: All I can say is I will do my very best.

Dr. Weinstein: Then I can bank on that. Is there any further business before this Section? If not, a motion to adjourn will be in order.

Dr. Arny: I move we adjourn.

(Motion seconded, put and carried.)

(Adjourned at 6:07 P. M.)

THE NEW PHARMACOPŒIA AS AN EDUCATIONAL PROBLEM FOR THE PRACTICAL PHARMACIST.*

JOSEPH WEINSTEIN, PHAR. D.

The ninth edition of the U. S. Pharmacopœia will soon be completed. The committee of Revision has spared no effort to make this book represent the last word of the pharmaceutical science.

The nomenclature, the macro- and microscopical pharmacognostic descriptions of botanical drugs, the chemistry of substances are minutely described; the modus operandi in preparing galenicals, the purity rubrics, the assay processes, each and

* Read before the Section on Practical Pharmacy and Dispensing, San Francisco.

all will bear testimony to the scientific character, and to the up-to-dateness of the work.

The new book will soon be placed in the hands of the pharmacist, unto whom it is the law by which he is to abide, to its commands he must strictly adhere and with all its requirements he is obliged to comply. Thus the decennial revision of the Pharmacopœia becomes a compelling power on the pharmacist to keep abreast of the times, for punishment is in store for him for failure to comply with the changed requirements.

Unique indeed is in this respect the position of the pharmacist. There is no such a thing as compelling any other professional to decennially change his ways. If a physician be desirous to take up present day methods, good and well, but no law will interfere with the medicus, for instance, for remaining loyal to the old-fashioned arsenic treatment in leucæmia and for his not resorting to the somewhat more successful benzol medication and X-ray treatment. Not so with the pharmacist. "Thou shalt not go any longer by old methods; by the new and latest abide"—is the dictate to him, and he must do so.

This order of things, whereby the druggist is to be kept from getting rusty and is to be prevented from becoming fossilized; this peremptory fiat on the pharmacist to imbibe the last and best in his science and this lifting pharmacy upwards, though accepted by all as a matter of course and very gratifying to all true lovers of professional pharmacy, is somewhat perplexing to me, causing me some uneasiness and placing me in the category of questioners.

I am inclined to ask, whether the rank and file of the pharmacists are sufficiently prepared to take up the advanced methods prescribed by the Pharmacopœia. Being fully aware that in many a state not even the minimum two-year course in a pharmacy school is required for license to practice pharmacy, I feel like asking what is at present the percentage of pharmacists in the United States fully able to meet the high expectations of them? For, could one, to whom no laboratory training was given, be expected to apply chemical tests and to perform assay processes for determining the alkaloidal strength of some of his galenical preparations? Or could one, who has never seen a compound microscope be expected to examine his drugs microscopically?

Truly, were I to be called upon for an expert opinion on the liability of the pharmacist, I would declare, that whenever the requirements of the licensing board are not sufficiently high and do not measure up to the knowledge exacted of him by the Pharmacopœia, the pharmacist can not be answerable for his shortcomings, for he is not fully responsible.

By giving this opinion of mine I do not wish to convey the impression that our standard is too high, and that something is to be done to retard the progress of pharmacy. Far be it from me. The disagreeable truth is told with the object of calling attention to the necessity of action for improving the status of pharmaceutical education, and especially to help those who, through no fault of their own, are behind the times, but if given the opportunity, would be only too happy to add to their store of knowledge.

With this object in view I would advocate, firstly, that a standard be established for pharmaceutical education in the United States, below which no board shall have the authority to go, and which should be sufficiently high to make a phar-

macist fully prepared for his work, as that preparation is understood in our day. When this is agreed upon, boards of pharmacy, especially in the states that have no college prerequisite, shall not license a pharmacist on the strength of his theoretical knowledge only, consisting of written answers to the examination questions, but submit the candidate to a thorough practical examination as to his ability to test the purity of his drugs, to do analytical work, etc.

Secondly, for the benefit of those members of our profession, who became such in years gone by, when the requirements were low, or who acquired their calling in sections of the country where no college training was required and where the boards were easy, but who, nevertheless, I dare say, are numbered by the thousands, the facilities of additional learning be granted, by the establishment of special pharmacopœia courses.

Let the schools of pharmacy throw their doors wide open for all those who desire to get information on everything pertaining to the Pharmacopœia, without any preliminary requirements and at hours convenient for the retail druggist. The courses should be conducted on practical lines only, such as testing for impurities, assay processes, etc., entirely eliminating theoretical instruction. Courses of that kind would be productive of great good, and they would help to do away with the anomalous state of affairs, where ever-increasing knowledge is required of the pharmacist without giving him an opportunity to acquire same. This is a great promising field for our educators, of whom many are also members of the Revision Committee and who are familiar with the theological lore, that when Moses legislated for the Israelites in the wilderness, he clearly perceived the unpreparedness of his contemporaries to adopt his laws, his code of ethics, but he proceeded with his work, having in mind the fact, that his own generation would die off, and aiming at their descendants and at generations to come, who would be more fit for his teachings.

Let us hope our members of the Revision Committee have not aimed that far, for the thousands of pharmacists who are not fully up to the present day requirements are not quite ready to die; they wish to live and to compete with us, and they can, through the agency of additional work taken up at special courses, become good and useful members of our great pharmaceutical fraternity.

DISCUSSION.

Dr. Weinstein: Now, I want to mention that my object in this paper was to bring out some discussion on this subject. I came to the idea that it is not exactly required of a practicing pharmacist that he shall take up a special course in a college of pharmacy, that he should know all about the theory, just the same as it is not required for a worker in a drug store to know the formula of every preparation that is sold. Thousands upon thousands of pharmacists would be glad to take up practical work in a college of pharmacy if opportunity would be given to them. Not long ago one college in New York City provided a special course in materia medica, and I know those who attended were very glad of it, some of those druggists who have been prosecuted by the Board of Pharmacy in the City of New York. The trouble is that the average pharmacist has never been to school. I am speaking of those who are not college graduates. They don't know. For them it is terra incognito. If you show a man once how the thing is done, he will be able to master it and be able to make tests of preparations that he handles in his store. If the colleges would think of this and open courses so that the pharmacists could take up special training in testing preparations, I think both the colleges and the pharmacists would gain considerable.

Dr. Arny: In helping the discussion along, I heartily commend all that Dr. Weinstein has suggested. I wish it were possible to do in this country today as Prof. Tschirch of Berne has done. When the Swiss Pharmacopœia came out, he arranged a six weeks' summer course in Switzerland, in the city of Berne, where the pharmacists got together. I believe he had as many as a hundred there. They came together and had a six weeks' vacation, and at the same time learned the new pharmacopœia. Dr. Weinstein has spoken of the institution with which I am connected, and I would like, for the benefit of our friends who are connected with other colleges, to mention what we are doing in that direction. Last year Dr. Mansfield started several courses. He had forty-five men and women. The courses were so successful that this year we have decided to start an evening course on the subject of the new Pharmacopœia. There shall be, first of all, the laboratory work in the pharmaceutical laboratory. But we feel that will not be so attractive. Then the assay classes. Then Dr. Diekman and myself are going to give an hour lecture once a week on the changes, chemical and pharmaceutical, in the Pharmacopœia. We feel sure it will be appreciated, for the reason that Dr. Mansfield's course was so appreciated last year. These are simply extension courses. A fee is to be charged by the college, and I think an exceedingly reasonable fee. I think this should be done by every college of pharmacy in the country. In state university towns it may be different, but I strongly advise the city colleges to do this thing. In New York, there is no danger of any of our boys taking the course, because they are required to be graduates in pharmacy, but we are going after men who have been in the business twenty-five years. When Dr. Mansfield first spoke of it, I didn't think much of it, but when I saw the character of the men, men forty and fifty years old, men who are taking it, then I considered it valuable. Ex-presidents of associations were going there, and it is a wonderful thing, and I think something in the way of a vacation course might be given in the state universities.

You have heard of the night courses in Cooper Institute. They have a night course in Cooper and made progress last year. We feel we ought to do the same. It is done merely from the standpoint of helpfulness. I strongly commend the idea to all colleges.

Mr. Osseward: There is another point. With us the pharmacists cannot come before the Board unless they have graduated from a college. They must have attended the two years' college course. When they come to us they answer that they cannot go to school. They have families to support and it is impossible for them to go to school. If those men could have a little assistance I think it would be helpful.

Dr. Anderson: I believe one point has not been taken up. We are also preparing a course similar to that outlined by Dr. Arny. We feel that the retail druggists of Kings County, where our college is situated, are entitled to this service. Our institution was founded and built up and has always been conducted and controlled by the Kings County Pharmaceutical Society. There is another service feature we are taking up, one which was recommended by our president in his last annual address. This is an instance where a trustee has ideas that have not occurred to most of the faculty. President Smith recommended in his annual address that we extend this course to prepare pharmacists for positions in the United States Army or Navy qualifying them for work required in this service. So we intend to incorporate that particular feature in addition to preparing the older pharmacists to do work with reference to the new Pharmacopœia.

APPARATUS FOR FILLING SOFT CAPSULES.*

J. LEON LASCOFF, PHAR. D.

My object in presenting this paper is not to discuss the origin or the use of soft capsules (as this is known to every pharmacist), but to acquaint the profession with an easy and time-saving device, which does away with the old method of filling the soft capsules with a dropper or burette. At present the dispensing pharmacist, as well as the manufacturing chemist, fills the soft capsules by setting them on a perforated wooden rack, or shallow box with a perforated cover, introduces the liquid drop by drop with a pipette or burette; when filled the capsules are sealed with melted gelatine.



Sealing Capsules. Filling Capsules.

This method, as we all know, takes up a considerable length of time, requiring a great deal of care, and is troublesome at best, and if one is called upon to do other things, time is a very important factor.

Two years ago I had the pleasure of presenting a paper before the same section on the subject of Ampoules and the method of filling same automatically; also exhibited a simple apparatus for this purpose, which I devised, as the result of a suggestion by Mr. Caswell A. Mayo at a meeting of our local branch several years prior to this.

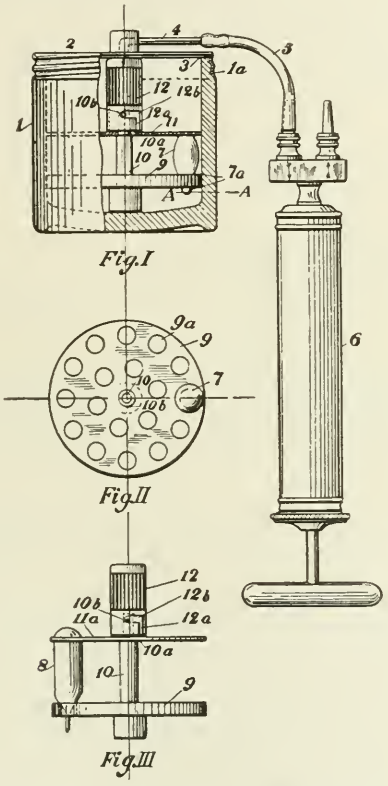
The outcome of this little apparatus was regarded very favorably; several of the colleges adopted its use. It occurred to me that the same fundamental principle involved in this procedure could be applied to a gelatine container as well as a glass one.

I am sure that this small and simple device will appeal to all pharmacists and manufacturers as the most practical, inexpensive, easy to manipulate, time-saving, clean and accurate procedure.

* Read before Section on Practical Pharmacy and Dispensing, San Francisco Meeting.

It consists of a glass receptacle, hermetically sealed, operated by means of a suction hand pump and the capsule retainer. The contents to be used to fill the soft capsule enter automatically; when completed they are sealed and washed off with a little Ether or Alcohol.

There is no question in my mind that physicians do not prescribe soft capsules freshly made with their own formulæ, because they know how troublesome it is to make them under the ordinary circumstances. When one considers the time consumed in making, we will say 30 capsules *at once,* that does not take any



LASCOFF'S SOFT CAPSULE AND AMPOULE FILLER.

Fig. 1.—A 4-ounce, screw-cap ointment jar; tube (4) and rubber tube (5) connect the former to an aspirator (6). An aluminum disc, see figures II and III, is placed within the jar; the disc is perforated so as to admit the necks of soft capsules. In the center of this disc is an upright (10) provided with a lug (10b) and with an offset (10a). Plate (11) has a cylindrical opening in the center for upright (10). Plate (11) is held in place by slotted nut (12), and the capsules, after removing the tips are inserted as shown in figure I. After the capsules are inserted and the frame put in the jar and the medicated liquid, the screw cap thoroughly fastened on, the air is removed by means of the aspirator and is then gradually allowed to return when the liquid will be forced into the capsules. The cover is removed, the aluminum holder taken out and inverted so as to have the opening of the capsules up. The surplus liquid is removed from the capsules and then sealed by means of melted gelatin.

longer with this apparatus than the filling of two or three by hand, we can easily conclude what financial gain we will derive by encouraging the prescriber to call for any combination of his own, freshly prepared.

In searching the various textbooks, like Remington's, Arny's or Caspari's, one can find descriptions and illustrations of hundreds of devices to facilitate manufacturing and dispensing, both on a small and large scale for every possible pur-

pose and for the filling of soft capsules all of them have the one fundamental principle and that is—to fill them *one* by *one*. The difference being only in the method of dropping the fluid into the capsule itself and the particular retaining base to hold the capsule while being filled.

For the hard capsule we have the Parke, Davis & Co. Capsule-Filler, Ihrig's and Remington's Hard Capsule Filler where large quantities are made at one time, but *not one* apparatus or device could I find to fulfill the purpose which this little apparatus does, especially when the same apparatus can perform two purposes, that is the filling of soft capsules as well as glass ampoules.

What is gained by this apparatus?

1) Any given number of soft capsules can be filled *at one* time, according to the size.
(2) Equal division of dose is accomplished without extra manipulation.
(3) Being constructed of glass and metal, it is easily cleaned and sterilized if necessary.
(4) The cost is nominal.
(5) It is very easy to manipulate, and
(6) Last and not least, the time- and labor-economy.

DISCUSSION.

Mr. Hynson: I have been a strong advocate of the soft and elastic capsule, but I believe now the hard capsule is more satisfactory for prescription work than the soft capsule. I believe you can get more satisfactory results, more permanent results, in the hard capsule, and within the bounds of the number 1, or 0 capsule, they are just as easily filled and they dissolve as well.

I think the great objection to this method is that it is going to take you three or four times as long to prepare the filler for six or twelve capsules as it would if you put them up in the old method.

There is one point in filling capsules, and that is, not to have any oil on the capsule; for there is difficulty in removing it, and the smallest amount interferes with a perfect seal.

In this connection, if I may be allowed to say it, I think the personal equation of the dispenser comes more in play in the handling of the liquid gelatin than anything else. With the greatest effort I have tried to fix some standard by which I could instruct the student and the clerks so that they could have this liquefied gelatin in a proper condition for use. I would like somebody to tell me how they are going to do that except to learn, like the candymaker and the cook, and all those people do,—by the touch of the thing, by the feel of it, exactly the condition it should be in. Now, if there is any other rule of doing that than simply by practice, I would like to know it.

Mr. Lengfeld: I would like to say that in sealing capsules I have had lots of trouble, but I find by using a little hot water on a piece of cotton and wiping off the top of the capsule I have less than one percent of leak. It turns a round edge just as if they were cut by machinery.

Mr. Nitardy: In connection with the filling of soft, elastic capsules, I would like to bear out the remarks of several gentlemen I have heard here. We formerly cut them at the shoulder; we now cut them long first, fill them, and after they are stacked up in the holders we then take a pair of scissors and cut them level with the shoulder, giving us a new clean edge, that has never been touched by anything, to seal.

In regard to sealing, I think Dr. Hynson is absolutely right—there is nothing but practice which will show you how the gelatin should be. We save the pieces cut off the capsules for melting up and getting our sealing solution, which makes it unnecessary to make a solution of gelatin and glycerin of the same proportion to have the same consistency and elasticity as that of which the capsules are made.

Mr. Lichthardt: The question in my mind is the accuracy of apparatus like that. Suppose the physician orders a five or ten minim capsule of some oil and you use that apparatus, how do you know you have got five or ten minims in that capsule?

Mr. Hynson: You test the capacity of the capsule beforehand.

Mr. Lichthardt: I have found them to vary.

Mr. Osseward: I want to state that you cannot depend on the capacity of the capsule; five minim capsules may hold six or seven, or maybe ten.

Mr. Hynson: Then you make up your bulk for all the capsules. I have never measured the contents before they were put in, but I measure the capsule and make up a mixture and dilute it up to the capacity of the capsule, some multiple of the number of capsules I want to fill, and fill each capsule to a certain point.

Mr. Osseward: There is another point regarding the sealing. It is just as you said, the only way to learn as to the consistency of the gelatin is by practice. There is evaporation of water going on while you are sealing capsules. You have to watch that very closely. So you need an experienced man.

SAND TUBES FOR THE RAPID SEPARATION OF TYPHOID BACILLI.

Several methods for the isolation of typhoid bacilli have been published, based on the much greater mobility of that organism than of the bacteria which accompany it in dejecta. The method now suggested by the authors is claimed to be rapid, simple, and effective. It consists virtually of a sand filter, which the typhoid organisms can penetrate at a much greater speed than other germs. A glass tube about 33 cm. long and 5 to 6 mm. in diameter is drawn out somewhat in the middle and bent in a U. The constricted portion is then filled with sterile sand to a height of about 10 cm. and the open ends of the tube are plugged with cotton. Broth or other culture medium is then introduced through one branch of the tube in such quantity that it reaches a level about 10 cm. deep above the sand bed in each branch. This may, if needed, easily be adjusted by means of a fine pipette. The filling may be either carried out aseptically or the completed apparatus may be sterilized. It is then set aside for twenty-four hours to ensure its sterile condition. The culture broth in one branch is then inoculated with a few drops of intestinal washing obtained after first administering an evacuant enema. This washing will generally be almost clear and contain only a small amount of suspended particles. The apparatus is then incubated at 37° C. for eighteen hours. When the stools contain typhoid germs the culture liquid in the other branch of the tube will frequently be cloudy, and typhoid bacilli may be detected by direct micro-examination. Occasionally the presence of *B. coli* may require a second culture in another sand tube. This will give a pure culture in the time indicated. If no bacteria pass through the sand in eighteen hours the typhoid bacillus is probably absent. A longer incubation should, however, be given, although in time organisms other than the one sought will ultimately traverse the sand stratum. In all cases the identity of the typhoid bacillus should be confirmed by the usual reactions. The method is specially useful for detecting "typhoid carriers" among those who are apparently healthy.—*P. Carnot and H. Weill-Halle* (*Comptes rend.*, 1915, 160, 148, *through Pharmaceutical Journal.*)

Section on Commercial Interests

Papers Presented at the Sixty-Third Annual Convention

MINUTES OF THE SECTION ON COMMERCIAL INTERESTS HELD AT SAN FRANCISCO, CAL., AUGUST 11, 1915.*

FIRST SESSION.

The Section on Commercial Interests of the American Pharmaceutical Association was called to order at 10 o'clock in the Gold Room of Bellevue Hotel, Chairman E. H. Thiesing presiding, and J. C. McGee, of Jackson, Miss., acting as Secretary.

Chairman Thiesing announced as the first paper on the program, "Individuality in Advertising," by Dr. William C. Alpers. The contribution was accompanied by illustrated advertisements. After discussing the paper, it was referred for publication.

The next paper of the program entitled, [1]"Overstocking of the Retail Drug Business," was presented by Mr. J. W. England, and follows:

OVERSTOCKING IN THE RETAIL DRUG BUSINESS.

J. W. ENGLAND.

The commercial value of a business depends upon the amount of its net profits in relation to the capital invested, and the net profits depend, in the final analysis, not only upon the skill exercised in buying stock, but also, upon the rapidity and completeness with which the stock is turned. That stock which is the most frequently sold and renewed yields the largest ultimate profit, all conditions being equal, and often when the conditions are not equal. Thus, if a stock of $100.00 of an article is sold on the basis of a 5% profit, and is turned over four times a year, it will yield much less annual return than the same stock sold at the same percentage of profit, turned over six times a year. Or, to be more specific, the first series of sales would net $20.00 profit a year and the second $30.00, or 50% more.

Multiply the turnovers and the net profits will be multiplied also. This is the basic principal of the department store business. Obviously, such a policy has a certain, but by no means complete, application in the retail drug business. The general public does not care to buy drugs of all kinds simply because they are cheap. Croton oil, tartar emetic, and ipecac, for example, somehow or other do not appeal to the bargain hunter, even if offered at "a particularly low price for this day only." And this is because the use of such drugs is exceptional, although when wanted they are wanted quickly, and this is true of many other drugs. Furthermore the public has come to know that drugs may deteriorate in quality, even when kept under the best of conditions, and they don't care to take chances. It is a case of "safety first." Hence, the number of drugs stocked by the average householder is relatively and wisely small.

But there are a large number of articles handled by the modern retail drug

* Papers and discussions thereon will be printed in succeeding issues.

[1] This is printed in the minutes because it embodies a resolution and was accompanied by a communication, considered by the Section.

store which are not drugs, and have no relation to drugs, and yet which the public expects the retail druggist to supply; and these articles the public can be induced to buy, and to buy freely, by proper advertising.

It is good business policy to buy the minimum stock of slow sellers, and the maximum stock of quick sellers at the best quantity price if the stock can be turned quickly. But it is poor policy to buy largely no matter how attractive the price, if you cannot do this. Better by far, an understock of an article, than an overstock. Better an underfed baby than an overfed one; for, in a certain sense, your business should be your "baby" and be given proper diet, rest, and exercise.

The special-discount-in-quantity lots is very appealing, especially if the margin of profit is small, but the practice of taking a special discount may lead to overstocking.

Overstocking should be eternally guarded against. Market conditions—the commercial law of supply and demand—should be studied constantly, if the stock is to be kept properly balanced according to selling value.

On the other hand, in buying stock, don't adopt a penny-wise and pound-foolish policy. Use judgment in all things. Don't make too many bites of a cherry. Better by far, buy a month's or more supply of an article, than buy from day to day, or from hand to mouth. It will be more economical in the end and the profits will be greater by reason of the better prices for the larger quantity-lots purchased at one time.

Probably the chief cause of overstocking by retail druggists is oversolicitation by the representatives of the wholesale drug houses. These solicitors are *not* evils; they are necessities of the retail drug trade and they frequently give most valuable information in addition to the service they render in the booking of orders. But the service is in danger of being overdone, to the detriment of both the retailer and wholesaler. The retail druggist is being constantly oversolicited and he is being constantly overstocked; as a result, he is locking up capital unnecessarily, while the wholesale druggist is spending too much money for the solicitation of business, which expense must be added to his cost of doing business. In other words, excessive solicitation leads to economic waste.

Mr. W. A. Hover, Chairman of the Committee on Credits and Collections of the National Wholesale Druggists' Association (and Chairman of the Committee of the Denver Branch of the American Pharmaceutical Association, also), has made a careful and comprehensive study of this question. His figures show that in Nebraska and Kansas (and doubtless in other states also), the retail drug trade is called upon on an average of about ten times a month by the representatives of the wholesale druggists located within the states named, the city druggists being more frequently solicited than the country druggists. Such an extent of solicitation is unnecessary and extravagant. There is no real need for it in these days of phone and mail. One visit a month for the country druggist and one visit a week for the city druggist would be, probably, all sufficient in the large majority of cases. At other times, the mail and the phone would fill every need. In Detroit, for example, the wholesale druggists have withdrawn all their solicitors, and no impairment of service has resulted.

A proper combination of personal solicitation, mail and phone, would in no way lessen the facilities of retail druggists for quickly replenishing stock or keeping in touch with market conditions, and it would result in the material saving of time and money.

In connection with this paper, I should like to offer the following resolution and ask your consideration of the same:

WHEREAS, The oversolicitation of retail druggists for the purchase of supplies leads to overstocking and unnecessary increase of capital, with no resultant increase of net profits, and

WHEREAS, Oversolicitation can be largely eliminated by the use of the mail and phone, with, we believe, no impairment of service, but with great benefit both to the retail and wholesale druggist; therefore, be it

Resolved, That we, the Section on Commercial Interests of the American Pharmaceutical Association, in annual meeting assembled, hereby request the National Association of Wholesale Druggists to consider the subject of oversolicitation and overstocking, with the view of diminishing the frequency of the visits of the representatives of wholesale drug houses, standardizing the service, and advancing the interests of the retail and wholesale drug trade.

Chairman Thiesing: Gentlemen, you have heard this paper. What is your pleasure? Will you discuss the paper first and listen to the suggestions and resolutions later?

Mr. Hynson: In this connection, I have in my hands a leter from Mr. W. A. Hover, to whom Mr. England refers, along this line, and I think it would be a very valuable addition to the proceedings of this Section if this were read and included in the proceedings.

Chairman Thiesing: Suppose you read it.

Dr. Hynson: There being no objection, I will read it. I have no special interest in it, it was handed to me by Dr. Koch.

DENVER, COLO., August 4, 1915.

Dr. Julius A. Koch:

In compliance with your suggestion, it affords me great pleasure to submit to you the views of the jobbing drug trade as reflected by correspondence with the members of the Committee on Credits and Collections on the subject of retail credits.

In only a few sections of the United States do the reports so far received indicate favorable credit conditions. Returns to my question, "What is your percentage of loss on your gross sales by bad debts?" indicate quite a marked increase over previous five-year periods extending back to 1900. Without doubt, the percentage loss for 1914 has been the greatest in the history of the trade. The majority of our committee are agreed that this excess loss and general decline in credit conditions is due primarily to the following reasons:

First. Inadequate capital. It seems to be the ambition and desire of every drug clerk, who has accumulated or can raise a few hundred dollars, to embark in business in his own account. He, therefore, depends largely on his ability to command an excessive line of credit for his success, which in a measure is disastrous.

Second. A too large proportional investment in furniture and fixtures. The beginner with a limited capital immediately invests a large percentage of the same in furniture and fixtures, for which he pays cash or obligates himself to monthly payments, in which case he is obliged to withdraw from his business cash capital necessary for the proper conduct of the same.

Third. He invests a liberal proportion of the balance of his capital in prescription products. If his location is an outside location in our cities, or if in country towns already fully supplied with drug and prescription stocks, the returns from this investment are entirely inadequate to warrant the investment itself. In other words, one-half of the druggists in our cities are today operating their prescription department at an absolute loss; this department in many instances being a liability instead of an asset.

Fourth. After making the above-mentioned expenditures the smaller part of his remaining capital only is invested in that class of merchandise which is active and from which his profits are derived.

The result, of course, is not difficult to foresee. If he succeeds at all, it is by the use of the utmost economy and care in business management, followed by years of voluntary confinement. Many of our city stores are one-man stores, compelling a life of voluntary confinement and under conditions but little better than a term of involuntary servitude.

In the judgment of our committee, the time is approaching when our largest communities will be served by exclusive prescription pharmacists, and there will at some time be a distinction between a drug store and a pharmacy. The drug store of the future will cease to operate a prescription department. The result of this division, in our judgment, will be beneficial. It will secure greater confidence on the part of the prescribing physician and will act in a measure to restore the writing of prescriptions by physicians rather than office dis-

pensing. The public will receive better protection and the practice of pharmacy will be on a much higher plane than is now the case. Personally, I am inclined to think that a division of this kind will result in a less volume of business on the part of the pharmaceutical manufacturer and also on the part of the jobber in pharmaceutical preparations, but, as an offset, the conditions will be so materially improved as to justify the jobber in advocating economic common sense methods.

There is also another question which is deserving of attention on the part of your Commercial Section. Namely, the subject of over solicitation. There is no doubt but what the retailer is over solicited by his jobber. Almost daily calls by traveling salesmen, with the corresponding frequent deliveries of small amounts, is an extravagant and wasteful method of distribution, for which the retailer has eventually to pay. Two years ago I made a survey of conditions in Kansas and Nebraska. I found, as a result of this survey, that out of 32 towns of two thousand population and over in the State of Nebraska, the druggists in these towns were solicited 227 times each thirty days, or seven times for each druggist each calendar month. Eliminating Saturday and Sunday, as there is but very little solicitation on Saturday the survey in the State of Kansas, covering 62 towns of two thousand and over, is as follows: The total number of calls each calendar month was 704. The average number of calls in each town was 11.4 every thirty days, or about one every two days, not including Saturdays and Sundays. This, of course, means that in the same town and on the same day there would sometimes be two or more solicitors representing as many different houses. This is not a good thing for the retailer; absorbing, as it does, his time and attention and inducing him at times to over-buy or to buy goods for which he has little or no demand. It materially reduces the amount of his individual orders, oftimes to his detriment in buying. The result has largely increased over-head expenses on the part of the jobber, both in the matter of house force and traveling service, for which the retailer is eventually obliged to pay. A certain amount of representation on the road by the jobber is necessary and desirable, both in the interest of the retailer and of his jobbing distributor. Competition, however, has brought about a condition at this time, the result of which is an unnecessary and extravagant duplication of service which is of no economic value whatsoever. If your Commercial Section can but realize the importance of this subject to your membership, you will, I think, heartily endorse and encourage an effort on the part of the jobbing drug trade to correct this manifest evil.

I sincerely trust that in the foregoing I have covered your expressed wishes and I am greatly in hopes that your Council may take such action in the matter as will be helpful to the wholesale druggist in his efforts to assist and be of benefit to you.

Sincerely, and with best wishes, I beg to remain,

(Signed) W. A. HOVER.

Chairman Thiesing: You offer that as a paper over Mr. Hover's signature?

Mr. Hynson: Yes.

Chairman Thiesing: Now, gentlemen, the paper is open for discussion. We will consider the two papers at one time, or at least that portion of it that refers to the overstocking and the service of the jobbing houses.

Mr. Hynson: I move that this paper be accepted and passed to thePublication Committee with favorable comment, and that this resolution offered by Mr. England be adopted as the sense of the Commercial Section of the American Pharmaceutical Association.

(Motion seconded.)

DISCUSSION.

Chairman Thiesing: There is much to that resolution. The cost of doing business with the jobbing houses seems to run somewhere between 11 and 14 percent, and no doubt much of it is attributable to the cost of getting the business. My attention has been drawn to that through a company that has been formed among the retail druggists of Cincinnati, and during 1914, the report of January 1st showed that we had done $450,000 worth of business

that year among 150 men. That would be an average of over $3,000 per man; and there is not a salesman on the road, and this business was done at a cost of doing business of less than 5 percent. I have not the figures exactly, but I think it was 4.92 percent. Now, when you sell an average of $3,000 to 150 men during the year, without a salesman, it goes to show that the expense of that service on the part of the jobbers is really beyond reason, and no doubt runs their cost of doing business up considerably.

Mr. Zeig: Is that a general jobbing service?

Chairman Thiesing: That is a general jobbing service. The delivery is paid for by the retailer. The goods are delivered to him at the cost to the firm plus overhead expense.

Mr. Osseward: Mr. Chairman, in connection with soliciting, about two years ago I established a little system. I told my head man—"From today on I want you to telephone the order to the jobbing house every morning at 8 o'clock." One solicitor would come around at 9 o'clock, another at 10. What was the result? We would not get the goods until late in the afternoon. When we telephoned our order in at 8 o'clock in the morning we would get the goods in the store by 10 o'clock. At first the jobbing house wanted to know what was the trouble; they thought something was wrong. I went down and explained to them. I told them that our time was too valuable to bother with the solicitor. I told them they got the business anyway and that it would save time to them as well as to us. They were very much pleased, and we have not had a solicitor from the jobbing house in our place since we started, and we get the goods in by 10 o'clock in the morning.

Mr. Thiesing: A further source of adding expense to the jobbing house is the extended credit given of from four to six weeks. In this company I speak of, our credit time is one week, and the men found after they once started that system, that it is just as convenient to pay at the end of one week as it is to pay at the end of four weeks, or to extend the time to six weeks.

Mr. Becker: I have had considerable experience in a department store in Chicago. We were right in the heart of the city, and we did a business of between $250,000 and $300,000 a year on an average stock of $25,000. We were right there in the market and had advantages. We did it in this way: We kept track of our stock. We had a card system. On every shelf there was a card which told the normal stock of the goods. Take cough syrups, we carried a normal stock of a proprietary of a sixth of a dozen. On the 50-cent size our stock was half a dozen; on the 25-cent size, a half a dozen. After watching the purchase and sales, I found the dollar size was not called for any more. I immediately eliminated that and discontinued it. I followed that same thing all the way through with syringes, hot-water bottles, razor strops and everything. We always used this system with reference to old merchandise: If we had a certain quality or size of hot-water bottles, we did not know whether a hot-water bottle had been on the shelf one week or six months. Then we adopted a way of marking them. It was a very simple system. All the department stores have this method. Say this is the tenth year of their business. In the month of January, they buy a dozen hot-water bottles, they are marked "A-10." A stands for the first month of the year, and it is the tenth year they are in business. Those bought in July are marked "F-10." A salesman of a hot-water bottle finds one is marked "A-10" and another "F-10." "A-10" is the one to sell, because that has been on hand six months longer than the other.

Mr. Thiesing: Another method of marking that was brought out at the meeting in Detroit was to take the number of days in the year and mark the article with the number of the day of the year.

Mr. Thiesing: Gentlemen, are you ready for the question?

The motion adopting the resolution and reference of the paper to Publication Committee was carried.

Mr. Thiesing: We will pass on to the next paper, "Arranging and Indexing Stock to Promote Sales and Improve Service," by Maurice P. Schwartz. I will ask the Secretary to read that. (Read, discussed and referred.)

The next paper was by William J. Lowry, Jr., entitled, "An Eight-Barreled Moth Ball Sale," on which the same action was taken, as also on the

following: "The Circulating Library as a Side-Line for Druggists," by Franklin M. Apple; "Advertising the Prescription Department," by Addison Dimmitt; "Possibility of a National Line of Non-Secrets to be Prepared by the Individual Druggist, but with Common Ownership of Copyrighted Labels," by Theodore D. Wetterstroem.

After considerable discussion of the latter paper, it was voted that the Section on Commercial Interests recommends the appointment of a committee to investigate in all its phases the possibility of creating a national line of non-secrets to be prepared by individual druggists with common ownership of copyrighted labels.

The following papers were read by title: "Our Own Make Non-Secrets Compared with Other Makes," by Fred W. Connolly.

"A Plain Talk on Business Methods," by Benjamin F. Pritchard.

"The Possibility of a National Line of Non-Secrets," by D. N. Robin.

A motion to adjourn was made and carried.

SECOND SESSION.

The second session of the Section on Commercial Interests was convened at 10 a. m., August 12, with Chairman Thiesing presiding and David M. Fletcher acting as Secretary.

Chairman Thiesing announced the committee on the question of the possibility of establishing a line of non-secrets, who are to report to the Commercial Section in 1916, as follows: Messrs. H. B. Se Cheverell, F. W. Nitardy and David M. Fletcher.

The following papers were then read, discussed and referred for publication:

"Perfumes—Basic Materials, Production and Selling Points," by William C. Hall.

"Some Sources of Profit as Applied to Retail Pharmacy," by A. S. Parker.

"Developing the Sale of Cigars," by Sol. A. Eckstein.

The papers announced at the prior session, contributed by Dr. A. O. Zwick and P. Henry Utech, were referred to the Section on Education and Legislation.

The election of officers resulted as follows:

Chairman—R. S. Lehman of New York.

Associates—E. H. Thiesing of Cincinnati, W. H. Cousins of Dallas, and George H. P. Lichthardt of Sacramento.

Secretary—J. C. McGee of Jackson, Miss.

The report of the Committee on the Chairman's address* was called for, but the members being engaged in other duties the recommendations of the Chairman were by vote brought to the attention of the Section by Mr. F. H. Freericks stating—

That the first recommendation was with reference to the growing use of so-called pharmaceutical preparations placed on the market by manufacturing pharmacists, in the sense of their competing with the work of the retail pharmacist, and of entering more and more into the field of the

* See minutes of Joint Session with Section on Education and Legislation, page 1203.

retail pharmacist, thus giving or leaving little for the retail pharmacist to do as such. The Chairman of this Section made a recommendation that there should be an effort on the part of our Association to come to an understanding with the pharmaceutical manufacturers with a view of calling a halt on the growing of their business as encroaching upon the field of the retail pharmacist, and with a view of making a limit to the extent to which they might go.

It is an exceedingly important recommendation. The recommendation was that a committee of five be appointed by the President of our Association, who would take this matter up with either the Association of Pharmaceutical Manufacturers, or with the individual pharmaceutical manufacturers. That recommendation, I do believe, deserves the hearty approval of the Section. I would move you that that recommendation for the appointment of a Committee by the President of the Association be approved by this Section and referred to the General Session.

Mr. Anderson: I second this motion, Mr. Chairman. I would like to call attention to the fact that Mr. Osseward's letter relative to certain advertisements was also referred to this Committee with the report. I believe a Committee appointed by this Association can perhaps accomplish more in regulating such advertising methods than they can in preventing these firms from putting preparations on the market. That is their business, and it is pretty hard to convince the pharmaceutical houses that they shall not put any further preparations on the market. But I think it should be referred to the Committee, and I second the motion.

Mr. Binz: I am in hearty accord with the sentiment of the Chairman, but I don't think it is possible to make any effort in that regard, because I don't think you can instruct a manufacturer what he shall do and what he shall sell and what he shall not. I think the only way this Association can have any influence at all is upon its members not being made a scapegoat for the manufacturer; but as long as the manufacturer has these goods, you cannot blame him for selling them. I think that legislation in that regard is a waste of time, because I don't think you will gain a thing by it.

Mr. Lichthardt: Mr. Chairman, speaking on this resolution, I am in favor of it if it will do any good. I think the trouble lies with the retail pharmacists themselves. They sell the goods. Coming to the subject of co-operation, the retail pharmacists of the United States, 45,000 of them could do something if they would get together and refuse to do this or that, and these people would come to them. That is the trouble. We are a house divided among ourselves. For a Committee to go to manufacturers and ask them to refrain from putting out this or that preparation I think will do very little good. We should come together and refuse to stock those goods and they would have to quit manufacturing them. I don't think the other channels of trade would sell enough of that class of goods to make the manufacture of them by those pharmaceutical houses profitable. Again, I say I am in accord with anything that will better the status and condition, especially the financial condition, of the pharmacists throughout the United States. The pharmacist is very poorly paid for his work and investment, and I would vote for such a recommendation, but I am afraid it won't do much good.

(Dr. Claus then took the chair at the request of Chairman Thiesing.)

Mr. Thiesing: In reference to the recommendation, I would say that the idea or intent of the recommendation is not fully understood. I referred more particularly to pharmacopœial preparations. We don't ask them to refrain from manufacturing or from selling remedies, but we ask them to refrain from inducing physicians to specify brands of official preparations such as Johnson's Elixir of Iron, Quinine and Strychnine, when the retail pharmacist should have a right to manufacture it himself. In that way, the retailer is deprived of the opportunity of using his skill and knowledge in preparing such elixir and he is compelled to carry many brands in stock. It is that class of articles that we ask them not to refrain from selling but to refrain from inducing the physician to prescribe that particular brand of a preparation.

Mr. Binz: Then I think the proper course to pursue would be to instruct the physician and let your druggist manufacture it. The physician should not prescribe or specify that particular brand. It is the physician that is to blame in that case and not the proprietary house. The proprietary man cannot be blamed for putting up his preparation. If you don't want the physicians to specify such things, you must get them not to do so.

Mr. Thiesing: The manufacturing houses cater to the retail druggist, and he is willing to make a few concessions, and while he manufactures many other things that he can get them to specify, I think some test should be made.

Mr. Freericks: In line with what Mr. Thiesing says, it seems to me that this is opening up a very broad question. If a committee is appointed by the Association, to open up this matter, it will have to go into that generally. It will have to revise its plans and it must be informed of the objections that are pointed out. Having done that, it can arrive at some basis that will appear reasonable to them. It may not appear reasonable to manufacturing houses, but there is nothing on earth like mutual understanding and like seeking to arrive at a mutual understanding. I can see in this recommendation of the Chairman, if it is properly taken up and carried out, an opportunity for pharmacy in this country. I believe that the manufacturing pharmacists in this country have a true interest in retail pharmacy, and while they are, of course, in business for money—everybody is—they are willing to concede, as far as it does not interfere with their business, the rights of the retail pharmacist.

I do hope that this recommendation will prevail.

Dr. Claus: Is there any further discussion? I will ask Mr. Freericks to put that question again.

Mr. Freericks: The recommendation was that the Association appoint a committee of five whose duty it is to make an understanding with the manufacturing pharmacists as to the line of goods that they are to put out in competition with retail pharmacists, and as to the effort they are to make in the matter of ordering the sale of pharmacopœial and N. F. preparations. That I think in substance is the recommendation.

(The motion was put and carried.)

Mr. Freericks: The other recommendation that I find in the Chairman's address is that, together with the Section on Practical Pharmacy and Dispensing, we arrange for the appointment of a committee of five who are to take up the work of interesting the dispensing physician in legitimate pharmacy by a national effort undertaken on the part of the American Pharmaceutical Association; the outline of the plan being that this Committee should take one large city and one small city in the country and commence its work in that way, impressing upon the local men that the work is a national work undertaken by the American Pharmaceutical Association, and particularly impressing this upon the dispensing physician in those cities, making it purely an educational campaign. I move that that recommendation be approved.

Mr. Anderson: I second the motion.

(The motion was put and carried.)

Mr. Thiesing then resumed the Chair and presided.)

Chairman Thiesing: Is there any further business? If not, a motion to adjourn sine die is in order.

The motion was made, seconded and carried.

ADVERTISING THE PRESCRIPTION DEPARTMENT.*

ADDISON DIMMITT, LOUISVILLE, KY.

Publicity is absolutely necessary to the success of a prescription business.

The old idea that a prescription department or case should be a place of mystery, bad odors and dirt, probably shut off in a badly-lighted and ventilated corner of the drug store, should be a thing of the past. Such places, I am sorry to say, still exist and are generally found in a so-called modern, up-to-date pharmacy, which consists largely of a lunch room with department store trimmings, decorated from ceiling to floor in glaring colors, yellow predominating, with flaming advertisements and a complete line of infallible cures for all the ills that the flesh is heir to. The real drug and prescription part of the business is of so little moment that they are pushed back out of sight and nearly out of mind. On investigation you soon learn from the owner or manager that the prescription department, in most instances, is conducted at a loss. The reason is they feature cheap prices to attract the innocent, thoughtless and penurious, and are forced by their general policy to price prescriptions so close that it is impossible, even with cheap clerks and cheap competitive drugs, to make a profit.

The other kind of store where you find an indifferent prescription department usually has a lazy or incompetent druggist as owner or manager. They belong to the "ne'er-do-well" kind; think the world owes them a living and sit down and wait for it to come. Unfortunately, there are lots of these fellows. You have seen them. The atmosphere in their entire store is bad, nothing to inspire confidence. They, of course, have not a prescription business of any moment; and I might add here that it is these two classes of drug stores that cause physicians to dispense, and, by their methods, shake the confidence of the public in the druggist, thus causing the professional and ethical side to be made ridiculous.

However, I am straying from my text, "Advertising the Prescription Department." I can only cite my own efforts along this line, which have been productive of very satisfactory results, as our prescription business has grown continuously and without sacrifice of principle or price.

In every community there is a large element of people who want the best both in materials and service, particularly is this true with medicine. As they know absolutely nothing about drugs and prescription service they drift to the neighboring druggist, unmindful of whether he is competent or not, to have their prescriptions filled. If results from the use of the prescription are not what was expected, the doctor is blamed. These are the people you can and do reach by straightforward advertising explaining the difference. I do not believe in sensational advertising, yet it must be sufficiently strong and individual to attract attention.

Before a druggist attempts to advertise his prescription business he must put himself in a position to make good; in other words, his material, equipment and service must be what he advertises, else his advertising will react and do him more harm than good.

* Read before Section on Commercial Interests, San Francisco.

We equipped our prescription department as hereafter described, before advertising. We have two large rooms on the second floor for prescription and laboratory work, with excellent light and ventilation. This department is connected with the salesroom by two dumb waiters and speaking tubes. Both rooms are finished in white enamel cases, ceiling and walls, and all work tables and shelves are of white Belgian glass; special ointment case; special refrigeration. Our laboratory is furnished in white, the same as our prescription room; in fact, we have worked out every detail so as to make our department complete and the best to be found.

We consider this one of the best advertisements for a druggist who desires to do a prescription business. We made it a point to take every physician in our city up to our department and explain its details thoroughly; we have also taken newspaper men and some of our appreciative customers.

We had photographs taken of the room and from them good engravings made. We then issued a small illustrated booklet, descriptive of our equipment, material and service. These we mailed to each physician of our city and vicinity. Many complimentary remarks followed. Since then we have printed a small-sized edition and wrap one in every prescription we fill. We find this a most excellent advertising medium and one that brings results.

Now a word as to the character of the men entrusted with prescription work. We select good men, pay them well and demand efficiency. Our men are all graduates in pharmacy, three of them being honor men of their graduating classes. Our head prescriptionist is a competent chemist. He has general supervision of the prescription room and does the laboratory work, particularly the assaying. Owing to our having competent men and equipment in this department, we supply virtually all of the physicians' laboratories in our city with their stains, reagents, special sterile solutions, etc. We find this is not only remunerative but also an excellent advertisement, thus securing the co-operation of the physicians for a good, profitable prescription business. A word from him to his patient carries more weight than anything we might say.

This brings us to the third and a most important consideration in developing a successful prescription business; that is, the material. We have for years and do now feature the chemicals and pharmaceuticals prepared by well-known manufacturers. This is not written as an advertisement for that firm, but I am trying to show what I believe has contributed largely to the growth and success of our business. This firm has been known favorably for years to the medical profession and their name is an asset; and as they market only one grade of products of highest purity, we feature this fact in our advertisements, both to the medical profession as well as the public. We say in our advertisements that when a physician does not specify a particular make of chemical, we use the best, which means a definite dose and definite results.

Now, as to advertising your prescription business to the laity. We do so without jeopardizing our standing with the medical profession. Some of our newspaper advertisements may border on the sensational, but experience has proven that it takes strong, well-spaced paragraphs to get pronounced results. We use three of our daily papers once or twice a week, three or four columns wide and from eight to twelve inches long. We try always to get the top corner

of page devoted to local society, believing that advertisements are read more by women than men. While the nature of our ads were such that there were no immediate results, yet in a short time we were getting prescriptions from all parts of the city. I attribute this largely to publicity by newspapers. I will give a few of the leading paragraphs we used in talking to the public through the paper; the headings indicate the character of reading matter that followed:

"It is better to have Newman fill your prescriptions than wish you had."

"Newman's rigid inspections assure purity and strength in their Drugs."

"Purity, Accuracy and Promptness—our three watchwords."

"Reason with yourself. Did you ever get something for nothing that was of real value?"

"Are you giving the sick one the best possible chance for recovery?"

"Suppose a cheap, ignorant drug clerk gave you Morphine when you asked for Quinine. Newman's skilled men can fill your prescriptions no matter how difficult others may find them."

"Highest Quality and lowest prices are as congenial as fire and water."

"Why do you go to your favorite Doctor?"

"Your life or the life of some loved one may depend on the man behind the prescription counter."

"A heart to heart talk on a subject that concerns you."

"You insure against fire, wind and water; also your life against death and accidents, then why not get prescription insurance at Newman's?"

"Confidence after all is the keynote to any successful business."

"Don't juggle with your health."

"Block signal service at Newman's with our checking system."

Newman's white enameled prescription department is as spotless and sanitary as a hospital or operating room."

"Attention to detail—NO SUBSTITUTION—These factors have made our prescription department famous."

"See your Doctor, then see us."

"We fully realize that every minute counts in time of sickness—that is why we use Motorcycle Delivery."

The following are a few paragraphs we use both in the body of counter booklets, as well as newspaper talks:

"Our prescription department is furnished with every scientific apparatus known for insuring accuracy and rapidity in preparing prescriptions, highly sensitive scales, electric sterilizing closet, tablet machine, suppository moulds, cachet machines, and numerous other modern appliances to facilitate and improve prescription work."

"All prescriptions filled by us are delivered in sealed packages, be they liquids, powders, pills or capsules; sealing strip is placed around each, thus insuring to the patient that it has not been opened or tampered with from the time it leaves the prescription department until it is opened by the owner."

"Instant dismissal is the penalty for substitution by any of our clerks; every man in our employ understands this thoroughly."

"Our guarantee label which is affixed to every prescription prepared at our place means just what it states. Kindly read it."

"All directions on prescriptions prepared at our place are typewritten, leaving no doubt in the mind of the patient as to the doctors's instructions."

"All pills, capsules, powders and suppositories are dispensed in hinged-top boxes, thus preventing the interchanging of covers, which lessens the liability of a serious error."

"The price of a prescription depends on the nature and purity of the drugs that

go into it, also the character and qualifications of the man who dispenses it. Our prices are based on the highest quality of ingredients and the most competent service. It is worth the difference; ask your doctor."

"All ointments or salves dispensed by us are placed in antiseptic collapsible tubes and the tubes in a substantial box, thus insuring freedom from exposure, which frequently causes ointments to become rancid and inert. Also protects the ointment from dirt or other foreign substance which may cause re-infection."

"Every one knows how sensitive the eye is—that if the least particle of dirt or dust gets into it, particularly if it is affected, how serious it is. To avoid just such thing occuring, we dispense all eye drops in a strong box in which the medicine and dropper can be perfectly protected."

"New bottles, new corks, new boxes, new labels, all scrupulously clean, are used for each prescription whether it be a re-fill or not."

"With us, prescription compounding is the most important work we do and we exercise every care and precaution to do it right."

"The Newman Drug Company's prescription department is located on the second floor, absolutely away from the noise and interruptions found in the sales department of all stores, and our prescription clerks do nothing else but fill prescriptions."

"We employ only highly educated pharmacists to compound prescriptions, men who are absolutely dependable, clean morally and physically, whose entire time, mind and energy is concentrated on their work; no distraction, no interference, as they are away from all possible interruption. This is an added safeguard against errors."

"Every United States Pharmacopœia and National Formulary product we manufacture in our laboratory has the Government tests for purity and accuracy applied. A record is kept with a control number, so we know, and can positively state, that all of our products are up to the required standards of strength and purity required by the National and State Pure Food and Drug Laws."

"Our firm buys and dispenses nothing but the best, irrespective of cost. We never substitute one product for another, claiming that it is 'just as good.' We never misrepresent an article, nor do we attempt to divert a customer from what he wants and asks for. We cannot and do not recommend patent medicines. We do not counter-prescribe, for that is absolutely the physician's field, not the druggist's. We do not permit our name or our place of business to be used to endorse or exploit fake medicines."

In conclusion would say perhaps I have offered no new ideas or thrown any light on this much-discussed subject, yet what I have written and have accomplished in this field is based on my own experience. I have pride in my calling and it has been my ambition to develop the professional and ethical side, thus to command and demand the respect of my fellowmen.

DISCUSSION.

Mr. Osseward: This paper again goes to show that it is possible to combine adequate pharmacy, and, as I call it, applied commercial pharmacy with merchandising. There seems to be a wrong idea prevalent that because a man runs a purely prescription store he should be opposed to commercial pharmacy. Such is not the case. If one man wishes to run a commercial pharmacy, so-called, if he wants to do merchandising, that is his business. All we ask from our side is that they give at least as much attention to the prescription department as they do to the merchandising, and they will find if they are persistent in giving it the right attention that they will get fully as much profit out of the prescription department as they will out of any other departmen. That is my contention.

Mr. Nitardy: One thing I was pleased to note is that the firm uses collapsible tubes for ointment. That is one of my hobbies. We do that in Denver.

Mr. Thiesing: Do you make an added charge for this?

Mr. Nitardy: Yes; we get a better price. It costs us from five to ten cents for the package. We use quarter ounce, half ounce, two ounce, three ounce and four ounce collapsible tubes, and our tubes are labeled on the sides. Some are red, some are yellow and some are blue, and the hinged boxes are labeled with corresponding colors of paper, so when two ointments of the same quantity are prescribed, the patient will readily distinguish between the two and not put the ointment back into the wrong box. You cannot put the label on collapsible tubes that will remain for any length of time. At first it is all right, but later they begin to roll up on the tube and the label becomes obliterated or destroyed, and we use that color scheme as a precautionary measure.

Mr. Thiesing: How much do you ask for a one ounce prescription of an inexpensive ointment?

Mr. Nitardy: It would be very difficult for me to answer that question, because I am not in touch with the prescription department sufficiently to know. But I know it was decided by the firm to increase the price of ointments all the way through in view of the higher price of the package, and we have had no complaints so far as I know. Take a one ounce tube in an ounce hinged lid box—it looks larger than a one ounce jar of ointment. The patient thinks he is getting more for his money because it is a larger package. It also looks more "classy," to use a slang expression.

I want to make another statement: On the inside cover of the box we have printed a little matter regarding the reason for using collapsible tubes, stating that the ointment jar is not a very sanitary container, and the object of the tube is to furnish a cleanly package, and that the tube affords better protection against air, dust, other contamination and light, than a jar.

Mr. Thiesing: I have always been of the impression that druggists, as a rule, do not charge enough for ointments dispensed, that is, ointments properly prepared that are put out as pharmaceutical preparations and that you would offer for inspection. We have given that a great deal of thought. We add from ten to fifteen cents and for an ointment of that kind we get fifty cents.

Mr. Nitardy: That is what we get.

Mr. Thiesing: And that covers overhead. I read your article about the prescription and the 27 percent profit.

Mr. Nitardy: Those were answers received from 10,000 prescriptions in ten different stores, and they represent, I imagine, an average of the profit made by Colorado druggists on prescriptions.

Mr. Thiesing: It seems to me so remarkably low, in view of the average cost of the work.

Mr. Osseward: In connection with that, it takes a great deal of time to prepare ointments properly, and I believe the pharmacist is entitled to a good profit. Take it in eye ointment, if we get a two drachm eye ointment with a collapsible tube and hinged box, we cannot charge less than fifty cents. If the ingredients are the same, it is the skilled labor you have to charge for. You are paying for it, and you ought to make a profit on your labor. We had an instance of that the other day. A doctor ordered some ointment, and he even directed it to be put in a tube; but the druggist failed to comply with the request, even was careless in the preparation of the ointment. The physician discovered the defect and by rubbing a little on the palm of his hand showed the patient the reason for the irritation that had been caused. Then the patient came to us. We charged, I think, fifteen cents more than the other store did, but we got that extra money for doing it right. This goes to show that you can get the extra price if you do the work. The physicians stand behind you.

Mr. Se Cheverell: The Chairman made a statement referring to our Colorado prescription prices, that your scale runs a little bit ahead. Have you ever made a systematic check on the prescription business the same as we did in Colorado this year?

Mr. Thiesing: No.

Mr. Se Cheverell: I venture the assertion—not that I am questioning your judgment—that on the positive, right-down-to-the-cent check, that you will be as greatly surprised as many of us were in Denver when we finished our final checking; and as a result of that the

most of us have added five to ten and in some places fifteen cents more to our prescription prices right straight through. We thought we were charging enough, but when we got right down to bedrock, figuring every item of expense, we were very much surprised at the small margin of profit on which we were carrying our prescriptions.

Mr. Nitardy: I would like to add one word. We found that while there was uniformity in prices charged, there was a great deal of discrepancy in the estimation of overhead expenses. We found the men that were the most careful got the highest figure on overhead for some reason or other. I believe that the average druggist does not take the time to calculate what it costs him for rent and telephone service and light and heat and waste and cost of investment, and such waste as is included in buying the preparation and then never selling any more of it, after the first prescription, and the skilled labor that you have to employ, and your breakage of glass ware, and the equipment you have to carry to run a respectable prescription department, and consider that on the basis of the number of prescriptions you fill. If you consider all those items you will find that the overhead amounts to a great deal larger percentage than the average cost of doing business.

Then there is another consideration I believe the average pharmacist overlooks. When you figure all that overhead of the prescription department—you only arrive at the cost without the running expenses, for the reason that when the prescription is filled, when you have paid the expenses of the prescription department, you have only a finished, salable article of merchandise just like a patent medicine on the shelf that your customer comes in for, and you hand to him. There may be risks of accounts in the prescription department, and the losses on the prescription department accounts are greater than at any other end of the store, for the reason that we are all human, and when a hard luck story is put up, we will let a man have a prescription where we would not let him have anything else. It takes study to figure out what it really costs you, and you will be surprised if you calculate what it costs you to fill your prescriptions. You will find that you make an average gross profit just like the people in Colorado, of about thirteen cents a prescription.

Mr. Thiesing: There is much in what Mr. Nitardy says, and no doubt it would figure out that way. In regard to part bottles of preparations, I had occasion to rearrange that part of our stock a month or two ago, and I was surprised to find that we had 327 bottles of patent medicine or proprietary medicine open. That does not take in the malt preparations.

Mr. Cody: I would like to ask a question in regard to pricemarks. We have pricemarks in several states, and I would like to ask if the eastern states would adhere to those prices.

Mr. Osseward: I am glad the gentleman brought that question up. I find in ten cases where we get a prescription, the price is marked on two. I find, as a rule, that the prices charged east are ridiculously low; you could not make a living; you could not pay the help and put up prescriptions for those prices. I had a lady the other day who came from the east, and when she asked me what the prescription was worth put up, I told her, and she replied that she paid half the price at home. I said, "Lady, you take it back, take the train, and have it filled."

Mr. Nitardy: There is a resolution before the House of Delegates this year, requesting that the American Pharmaceutical Association appoint a committee of five to investigate the cost of prescriptions in various parts of the country, and the retail prices received for these prescriptions on a somewhat similar basis as was done by the Colorado Pharmaceutical Association this year. A similar request has been sent to the N. A. R. D., so that all over the country a campaign of investigation can be carried on during the coming year in regard to this very vital and important subject, this committee to report back to this Association next year with a statement of what the committee believes should be the proper gross profit made on prescriptions. When that is done, we will have a basis on which to work in harmony all over the country as to what we ought to get for prescriptions. I am sure that most druggists that have only a moderate prescription business are losing money on every prescription they fill. Only those with large prescription businesses make a fair or small percent of profit or break even. There are very few druggists in this country today who are really making any profit on prescription business, and that is one of the reasons why the

drug profession, as a whole has such poor financial strength. We are not placing any value on our service; we are trying to charge a profit on the material we supply. I know from experience that the average druggist figures this way: He takes an article, say a certain amount of drugs that cost twenty-five cents, and he doubles that, figuring he wants to make 100 percent; he throws in gratis the container, the label, the work, whatever is necessary to his service, overhead expenses and everything else. That is all free. As a result, he never figures out that the things he gives free reduce his profit on the material that he is selling.

Mr. Osseward: There are not very many prescriptions on which you are making money. My average prescription, with the man I had in my store two years ago, cost 23½ cents expense. Last year, it cost me 23 cents. Every year I learn what it costs. When I take stock, I figure up my result. I find that I have filled so many prescriptions. I deduct a certain percentage for biologics, and things like that, but my total expense of the year is divided by the number of prescriptions that have been dispensed, and I call it my expense account. In other words, the expense of doing business with us this year will be based on 22 cents for each prescription.

Mr. Cody: Physicians are largely to blame for this condition. I now speak more of country stores than city stores. City stores are large and you have a transient trade. In the country you don't have that. They will pay fifty cents for a prescription here and pay another price somewhere else. A patient will say to a doctor, "What do you think that ought to cost me?" The doctor will say, "Oh, that ought not to cost you more than so much." And the doctor is just as liable to order something that costs us ten or eleven dollars a bottle, and tell the patient that he ought to get it for a dollar. That is a condition which has an effect on us.

Mr. Osseward: I would advise you to try a little education among the physicians. I think a heart-to-heart talk with the physicians about giving prices to their patients would improve matters. Just ask the doctor to tell his patient that he doesn't know anything about prices. I have a physician now who invariably will prescribe proprietary medicines. Whenever he prescribes he will tell the patient, "You will have to pay a good deal for that because it is expensive." It makes a good feeling all around. The patient expects to pay a good price, and he does not complain.

Mr. Cody: If the doctor writes for a bottle of any patent medicine, sarsaparilla, or anything else, and says, "Use according to the directions on the bottle," I simply pass over the bottle and charge the same as if there was no prescription; but if it needs a new direction on it and we have to wash off the label, we charge an additional amount.

Mr. Nitardy: The service is worth that, but we don't want to get the wrong deal on it. Our firm has always looked upon that as not very good business policy. When we sell a proprietary medicine in the original bottle, and the patient will know what it is, we get the same price as if they simply called for the preparation. As a matter of policy, we have always done that. If the doctor prescribes a pint bottle of mineral oil, just that way, so the patient will know, and our price over the counter for a pint is fifty cents, that is what we get for that prescription. We make no extra price because we don't like to have the people think we charge more just because the preparation is called for on a prescription.

Commercial Section and Section on Education and Legislation

PROCEEDINGS OF THE JOINT SESSION OF THE COMMERCIAL SECTION AND SECTION ON EDUCATION AND LEGISLATION.*

The Joint Session of the Commercial Section and Section on Education and Legislation was held in the Gold Room of the Bellevue Hotel, San Francisco, California, Tuesday, August 10, at 2 o'clock p. m., with Chairman Frank H. Freericks, Chairman of the Section on Education and Legislation, and Chairman Edward H. Thiesing, of the Commercial Section, presiding. In the absence of Secretary R. A. Kuever, Clarence McKellips acted as Secretary pro tem.

Chairman Frank H. Freericks, after calling the meeting to order, said: In the absence of the Secretaries of the two sections, Prof. Clarence McKellips has agreed to act as Secretary of this meeting. I take it that that will be agreeable to all, and I might say that Chairman Thiesing will open the program with his address as Chairman of the Commercial Section.

CHAIRMAN THIESING'S ADDRESS.

It was with some misgiving that the honor conferred upon me last year was accepted, and I trust that my shortcomings as Chairman of this Section will not be ascribed to an unwillingness for work. The commercial side of pharmacy and its needs are of course clear enough to all pharmacists, but to make the most of Section work both experience in it and a large acquaintance among our members is a very desirable adjunct.

The commercial side of pharmacy has always vastly interested me not alone on its own account but as an essential to the progress of the art and science. The love for true pharmacy need not be alone dependent upon material welfare, and yet if my experience and observation may be a criterion, it does look to me that the man weighed down with the care of meeting obligations is but little disposed to regard pharmacy aside from his own concerns or to give thought for its general advancement and improvement. The cause of retail pharmacy, in my judgment, is intimately connected with its commercial side and features.

With all due consideration for the opinion of those who are interested in pharmacy only as an art and science, my patience is taxed when they would ignore the business part of the drug store and belittle the many side-lines which have come to find a place in it. Honest business when not altogether foreign, in the accustomed sense, in no manner discredits pharmacy, and many a man has found opportunity to be of service to it only because of the profits realized from the commercial adjuncts to his American Drug Store. We must accept conditions as we find them and work for their improvement. This Association, deeply concerned with pharmacy as a profession, would poorly serve its purpose if it failed to consider the commercial problems, and to help solve them so that the one may be reconciled with the other and hand in hand lead to higher and better things. Therefore the Commercial Section has an important place in the general

* The papers presented, excepting the addresses of the Chairmen, will be printed in this or succeeding issues and be accompanied by the discussions.

affairs and arrangement of our Association. I earnestly trust that the membership may give it even greater attention and thought, especially since it represents an activity which distinctly upholds the retail pharmacists whose interest and work should be maintained and increased.

The retail drug business is not and has not for years been in a very desirable condition. With prices demoralized very generally in the large communities on articles of a proprietary nature, prices have been reduced to a minimum on fully half of what is sold in the drug stores. With an evergrowing output of pharmaceutical products by manufacturing houses, the opportunity for exercising pharmaceutical skill and knowledge is constantly growing less. With greater inroads on the legitimate field of the retail pharmacist by dispensing physicians and more especially by those who cater to the latter, the troubles of the pharmacists are many. It is to these and their possible alleviation that I would ask your attention.

Pharmaceutical work in the drug stores offers many opportunities that are wasted to-day by many retail pharmacists. Products which they can well prepare are bought because of expediency and lack of initiative. Some even buy pharmaceutical preparations. Regardless of the fact that such methods do not justify the claim of being a retail pharmacist, such lack of correct pharmaceutical endeavor is usually a lost opportunity for profit.

Pharmaceutical skill whether exercised in the manufacturing laboratory or in the retail shop must be paid for and constitutes a part of the cost of the finished product. Of course the manufacture on a large scale of some products can be done at greatly reduced cost, and lower than is possible for the retail pharmacist; many, however, can be manufactured by retail pharmacists at a profit. In the cause of retail pharmacy we should try to reach every retail pharmacist and endeavor to create in him a greater interest and pride to supply his own needs, whenever possible, in the manufacture of pharmaceutical products. The work on the part of retail pharmacists may be profitably extended to a line of non-secrets for serving household purposes. These ordinary and self-evident thoughts, if taken to heart and acted upon, will increase the profits of every average drug store and will advance the art of pharmacy. To arouse a greater interest in work of this kind appears particularly to be the mission of State Pharmaceutical Associations.

THE MANUFACTURE OF PHARMACEUTICAL PRODUCTS.

It is not alone the growing neglect of the retail pharmacists to use their pharmaceutical skill which tends to make business conditions so unfortunate, but the manufacturers of pharmaceutical products have much to do with present day conditions confronting retail pharmacy. Needless to say, the manufacturers may well contend that they fill only the wants as they exist, but really do they not create wants without need, against the best interests of the retail pharmacists whom at the same time they desire to retain as customers?

Is it fair for manufacturing houses to continually burden the market with new preparations, adding nothing to the merit of such as already exist? Is it fair to Retail Pharmacy for manufacturing houses to detail physicians and encourage the use by them of special brand products, which are often without added good for either physician or patient, over the recognized preparations of the Pharmacopœia and National Formulary, and which every pharmacist should have an opportunity to make and supply? It cannot be denied that the present methods of business as pursued by pharmaceutical manufacturers have an immediate effect upon and tend greatly to injure retail pharmacy. For myself, I am rather inclined to believe that aside from the prospect of money return and of profit, most if not all of our pharmaceutical houses have an altruistic interest in Pharmacy. They, I believe, want retail pharmacy to continue as such and would truly regret its extinction. Of course, we may not expect and may not hope that the manufacturing pharmacist will undo himself, to maintain the retail pharmacist, but

may we not at least endeavor to secure an understanding which will satisfy the one and serve the other? It seems to me that something must be done in the interest of Commercial Pharmacy to save Professional Pharmacy for the retailer. Can we not arrive at an agreement which will mark the line of operation between the correct business endeavor of the manufacturing pharmacist and the retail pharmacist? My very high regard for those engaged in manufacturing pharmacy induces me to advocate, that such an agreement and mutual understanding be sought. To that end I recommend the appointment of a committee of five retail pharmacists to give thought and study to the problem and to take it up with manufacturing pharmacists or their accredited representatives.

THE DISPENSING PHYSICIAN.

Possibly no other obstacle to retail pharmacy can compare with the one caused by dispensing physicians. It very materially affects every retail pharmacist, and as a rule to the disadvantage and injury of the patient. We must grant that dispensing physicians as a whole will not agree to our claim that they disregard the best interests of their patients. We must allow also that frequently, from their point of view, they may reasonably have ground for such prostitution of their profession, and the difficulties are by no means one-sided. As I reflect upon the growth of the dispensing evil by physicians, as it has grown in the course of years in my community, (which no doubt is equally applicable elsewhere), I come to doubt that this problem has been properly handled by retail pharmacists. There is certainly a total lack of understanding or of an effort at such understanding. The evil has become so thoroughly rooted that it is hardly within the possibility for individual pharmacists to successfully attack it. Its uprooting, if at all possible to accomplish, must depend upon well directed, intelligent and organized effort. The attack to be successful must be upon the highest and most broad-minded plane; it must be primarily of an educational nature. It seems to me that the American Pharmaceutical Association is best equipped for resultful work along this line. At least it is worth an attempt and I urge its making.

Without taking too much time in an elaborate discussion, I submit as a possible and practical way for approaching this subject, the following: Through a suitable committee representing both the Section on Practical Pharmacy and Dispensing and the Commercial Section, I would formulate plans for reaching all the dispensing physicians of one fairly large city and of one smaller city, and would at first center all the energies on these selected cities. This should be undertaken by and with the co-operation of our local members. After a most thorough study and formulation of complete plans, the committee having secured a complete list of the dispensing physicians in these cities, should make it a personal matter with each of them, acting for the American Pharmaceutical Association.

It may be that I am mistaken, but I do believe that an intelligent approach of the average dispensing physician along high and educational lines will have beneficent results for the good of pharmacy and for the public well-being. This is submitted merely as a thought, and I hesitate to make of it a positive recommendation, preferring that such be left for decision by those better prepared to arrive at a correct conclusion.

In closing I would submit for your consideration that our Journal may well give a greater part of its space to the discussion of problems and matters which concern commercially the retail pharmacist. It will be helpful to our membership who are engaged as retail pharmacists and have a tendency to enlist from among their ranks a greater number of members.

I well appreciate that the Chairman's address might be extended to include a discussion of details and special features which would be of direct interest to the individual retail pharmacist in connection with his business, but believe that such purpose is best served by the presentation of papers and their discussion. In arranging with the Chairman of the Section on Education and Legislation for a

Joint Meeting of the two sections, we have had in mind to show that many of the activities which are now allotted to the various sections may well be brought together and be equally interesting to all in attendance. If in a measure we are successful, then our effort will be well repaid.

F. W. Nitardy moved that the address be referred to a committee. Seconded by Mr. H. B. Se Cheverell.

Chairman Freericks then asked whether there was any discussion of the address of Chairman Thiesing and asked whether the body did not want to pass it to a committee, and possibly have a later discussion.

DISCUSSIONS.

Mr. Osseward stated that inasmuch as Chairman Thiesing had recommended in his address that a committee be appointed to get in touch with the manufacturers regarding many of the products which they prepared and which increased the number, that he would like to read a letter which was given to him by one of the Seattle physicians, and one which he thought would fit in with the very work of the committee.

The letter in part follows:

Dear Doctor: One of the best examples of the occasional superiority of a pharmaceutical specialty over the product of even a skilled pharmacist, following a physician's prescription, is to be found in the case of ————————. Your prescription calling for ———————— (contents hereafter indicated) could be filled, but the result would be neither sightly nor palatable in nine cases out of ten.

Bromoform is a splendid sedative; but there is only one way in which it may be safely administered, i. e., in solution. It is so heavy that emulsions are not practicable; and if kept in pure form it is exceedingly subject to decomposition.

Our preparation is efficient, permanent and palatable. With it you can obtain the sedative action of bromoform, in conjunction with the expectorants, ipecac, ammonium bromide and benzoin, with safety to your little patient and without incurring his everlasting enmity on account of the "awful taste of Dr. ————'s medicine."

If you are not familiar with it let us send you a sample.

Mr. Osseward: And the doctor writes on the side of it, "Mr. Osseward, what do you think of their statement?" I for one, as a dispensing pharmacist, object to such procedure; I for one will not admit that this particular firm is so much superior to us in compounding such a preparation; and I do not believe that any other practical pharmacist would allow manufacturing concerns to assert superiority in their work.

It is not such a difficult compound to prepare; it does not seem that we are so incapable in our work in preparing a preparation of that kind, and I do not believe that a firm has a right to place such a preparation before the physician, or has a right to put such propositions to the physician, in our disfavor.

And I believe that a letter of this kind fits in very nicely with the recommendation of the Chairman to go before the manufacturer and see if we cannot get together on a middle ground so we will agree on something to prevent such as this. I do not believe it is fair for a manufacturing concern to send out such correspondence.

Dr. W. C. Anderson then stated that he believed the retail drug trade ought to know the name of firms that are soliciting business by means of that kind of advertising; that to his mind a letter of that kind constituted a direct charge against the legally qualified and educated pharmacists of this country that they were not able to compound a prescription correctly; that in his opinion that was what the letter was meant to infer; that such attacks ought to be stopped by the retail drug trade in the same manner as a few years ago the Association had taken up the matter of detail men from pharmaceutical houses going into the homes of physicians and explaining to them that if they sent their prescriptions to the druggist they would not be compounded correctly, because substitutions would be used and that the only way they could get effects for their patient properly would be by preparing a

prescription by their or by its coined name; that it was disreputable for the houses to call attention in that manner to their detail men, to the embarrassment of the pharmacist at large; he believed many of the houses had caused their detail men to stop that kind of work.

Every time a pharmacist came in contact with a letter of the character just read, and every time such a matter was learned of there should be a strong protest; that very often physicians who were friendly to the pharmacist came to him and told him what the detail men had said to them in reference to their preparations and what detrimental remarks had been made in reference to the matter as against pharmacists connected with phases of the pharmacist's work; and that in his opinion the American Pharmaceutical Association ought to air those things in order to put up such a protest that guilty pharmaceutical houses would be compelled to stop that kind of advertising.

Chairman Freericks then inquired whether there were any other remarks on the motion to refer the address to a committee of three. Dr. Weinstein then moved that the letter read be referred to the same committee. There being no further remarks, the motion was put, and carried.

Chairman Freericks then appointed Mr. Nitardy, Mr. Osseward and Mr. Se Cheverell as members of the committee.

Chairman Freericks then yielded the chair in favor of Chairman Thiesing of the Commercial Section, in order that he might offer his report.

CHAIRMAN FREERICKS' ADDRESS.

We may know whether we have rendered truly worth-while service from the work undertaken and performed. Year after year new minds apply themselves to the confronting problems; they seek advancement and light; they devote thought and study in order to help the common cause and to bring real progress. If only we would devote ourselves toward accomplishing, toward crystallizing and realizing in deed, the valuable word of our predecessors, then we might submit results and prove duty at least in part performed. Systematic, co-ordinated, and well planned effort, is our need. There should be a continuity of work and thought, not to the exclusion of new thought, and the commencement of new work, but nevertheless with an aim first at results.

Last year Chairman Craig served this Section with advice of true value. If only it be my just claim that we have advanced toward realization in a small measure and heeded in part the advice so given, then my office has not entirely failed. Well might I adopt the Address of last year and leave it, for its wholesomeness I cannot hope to improve. Of course custom and needed reference to current events will not permit that I adopt the Address of last year, but most earnestly do I ask you to continue mindful of the recommendations then made. The papers and reports which will be presented at this meeting may prove at least an attempted start at realization.

OUR LEGISLATIVE CONCERNS.

Correct, desirable and worth while legislation can follow only in the foot steps of well directed education. Legislation predicated and dictated only by self-interest without due regard to the needs of all, is built upon sand. The proper needs of all cannot be understood, measured and consummated unless they find general intelligent attention and endorsement. As the whole people advance, and progress, so do a large portion of them learn to know better and higher things, and learn to adjust their affairs in keeping. That which satisfied and sufficed fifty and a hundred years ago, will not answer at all to-day. Our ideals are upon a loftier plane, we are less new and consequently more exacting. It is not the few who unsupported may direct the course of correct and truly needed legislation, no matter how much they may be right in proclaiming such need. It hap-

pens, of course, that necessary legislation in accord with the public welfare, results from the active effort of a few, but unless the public understanding is raised to the level of what is truly desirable, the result is of no practical value, meaning only more laws and more violation of laws.

The needs of pharmacy for better and correct legislation point in every direction. Year in and year out pharmaceutical bodies discuss these needs, to accomplish little, but to suffer more. In a large measure our efforts toward legislative improvement have been misspent. We have overlooked or ignored the unshakable fact that we cannot have a correct public understanding of legislative needs pertaining to pharmacy unless we first have a correct education of the Public mind. It is for us to reach the public. This we may do either by agreement with and between all who are its acknowledged spokesmen on a particular subject, or, if this fail, then by direct appeal. Our legislative aims and efforts are either right or wrong. If wrong they should fail, if right they must win. Right or wrong we cannot hope for determining results unless we are first willing to seek agreement with all who may be directly concerned, and then if special interest will not grant what public welfare demands we may look to the general public by an intelligent statement of our case. No other class of men and women have at hand such wonderful opportunity for successful appeal to the people as have the pharmacists of the country. Let our cause be right and it will be crowned with success if properly stated. Concerted action of pharmacists along that line, fairly directed, will within two years give them and through them to the people any legislative measure which they may desire and which ought to be on the statute books. The shameful and uncivilized practice, except in cases of emergency, of allowing physicians in settled communities to make and dispense their own medicines cannot withstand a proper educational campaign and much less the methods of the dark ages to have people use so-called patent or proprietary medicines without some knowledge of their contents and some means to learn their virtue.

There are no doubt other factors which should have our consideration in the matter of securing either State or National Legislation of a needed and desirable kind. Too often Legislative Measures are introduced on the initiative of Committees without having been discussed and considered by the entire body whom they represent. All may be agreed on principle but some may disagree on detail. Thus a division is created leading to chaos; dissension carried into Legislative Halls and principle defeated, all because of difference on frequently unimportant detail. In an attempt to sum up the important features for successful endeavor to secure desirable legislation we must have in mind that it can follow only and will always be largely dependent upon thorough agreement among ourselves as to every provision and detail before introduction; an earnest effort for mutual agreement in a conciliatory spirit with all others who may be specially concerned; against the continued opposition of special interests strongly entrenched, to a recognized rightful measure; a direct appeal to the public by a campaign of education carried on through every retail pharmacy.

EDUCATION AS IT CONCERNS PHARMACY.

We come now to the other branch of our Section work. Frankly, your Chairman enters this field with great hesitancy, and a full appreciation of his own limitations. A comprehensive outline of the status of pharmaceutical education, its advancement and its further needs require understanding not only of what may properly be expected in the practical operation of a retail pharmacy, but also of the best methods for fitting the student at college, so that he may correctly perform his duty, and appreciate his responsibilities. It is a field which can best be entered by one who as a teacher in the properly equipped college can combine his greater knowledge, and source of knowledge, with an insight to the correct practical operation of a retail pharmacy. As already stated, Chairman Craig last

year recommended activities which well deserve the attention of those who are concerned with them, and if they be acted upon, and are carried through to actual realization, the cause of pharmacy will have been splendidly served. A few observations from one not so well qualified concerning actual conditions as they appear to exist may not be out of place. Clearly would I want it understood, that my concern is with the retail pharmacist, and the teacher who at college prepares the student for retail pharmacy. Notwithstanding the proclaimed catholic character of our Association and its mission, my heart and mind are primarily concerned with the retail pharmacist, the apothecary if you please, his preservation and future. I contend for a place in the sun to the retail pharmacist. Our Association and this Section must be primarily concerned with retail pharmacy and its future. What good purpose can it serve, to ever increase the requirements for becoming a pharmacist in the face of ever-decreasing opportunity to exercise the functions of a retail pharmacist?

We serve no purpose in the general economic scheme by educating and training young men when at the same time we stand by and allow conditions to grow which make such training and education utterly useless and a waste of time. It does not require higher education, larger training, and greater learning to be merely a distributor or hander-along of the products manufactured by others. The very life of retail pharmacy demands that a halt be called. If the practice of retail pharmacy justifies its continued existence, as I certainly believe it does, then something must be done to stop the inroads which are being made upon it. Our colleges and schools of pharmacy depend for their student body upon the young men and women who intend to be engaged in retail pharmacy. If such institutions are to serve only for educating and training the men or women who would enter manufacturing pharmacy, then time will soon decrease their number. Notwithstanding the pre-requisite and its extension, yes in fact because of it, a revolution is bound to come unless there be a stay in the trend of proceedings; unless the opportunity for the exercise of pharmaceutical skill and learning be retained and increased for the retail pharmacist. In my humble judgment it is for the teachers in pharmacy to direct their attention toward that end. An evil condition now exists and constantly grows. It can be met and best overcome by those whose knowledge and learning peculiarly fit them to cope with such situation. Our colleges, and schools of pharmacy, must take the lead in devising ways and means for preserving and again creating the necessary opportunity for retail pharmacists. Largely it is for them to awaken greater interest among medical men, and in medical institutions for correct retail pharmacy.

Understand, that I have no desire to attack any of the magnificent industries which have grown up in pharmacy, in fact there is a sincere desire for their continued progress and prosperity. I have no motive whatever not founded on the best of good will, but in the cause of pharmacy, retail pharmacy must stand first. Well may we direct our attention to the propaganda for the use of biological products, not with a view of retarding progress and improved medication, but with a view of checking zealous prejudice often inspired by the necessities of self-interest. A distinct tendency seems evident also to crowd out and belittle vegetable therapy, when it is not at all certain that this should be allowed. Experience has taught that the hankering for something new, the following of style and fashion frequently leads to discarding what is more useful and the taking on of something less useful. Who is to grapple with such possible situation in Pharmacy unless it be men who are by learning and training fitted, and foremost among them as a class, as are our teachers in colleges and schools of pharmacy. Certain it is that this matter is of serious concern to retail pharmacy, and while a proper regard for the public welfare should always be uppermost and should always demand a thorough and impartial test of the new, it equally demands that the old which has been tried and found of service be not thrown over-board to suit fancy or self-interest.

With your kind indulgence, and in the light of what has been said herein we would now discuss briefly the events of the past year as they concern pharmacy, either in the presentation of new problems, or the saving or continuation of old ones. It is most thoroughly appreciated that views which may be expressed by me in that connection, may not be in accord with the views of those who are better fitted and better qualified, but at least I may ask that they be credited with sincerity and conviction.

THE FEDERAL REVENUE ANTI-NARCOTIC LAW.

The so-called Harrison Law which became operative March 1st has attracted public attention second only to the Food and Drugs Act. Simultaneously with its becoming effective the Commissioner of Internal Revenue promulgated regulations, some of which prove an appreciation of the difficulties to be overcome. That these regulations in part amounted to legislation cannot be held against the Commissioner who recognizing his inability to accomplish the proclaimed purpose of the Law, was compelled to thus provide what he should have found therein. The danger however remains, that these needed regulations, concerning particularly the distribution by physicians, dentists and veterinarians, may not stand the test of judicial decision, and accordingly any contemplated early amendment of the law should include proper provision in that respect, the need for which is largely substantiated by the Commissioner's action. Amendments are almost certain to be necessary.

Without any desire to under-estimate the right of all to find consideration and opportuity to be heard, it is to be sincerely hoped, that the representatives of retail pharmacy will have a greater voice in deciding upon the scope of such amendments. In general we must recognize on the part of the Internal Revenue Department an earnest and intelligent endeavor to make the law serve its intended purpose. It is but to be expected that the many details, each having two or more aspects, should at first result in decisions and regulations, which though intended for the public welfare may not be so. It is certain too, that some regulations have been prescribed which go beyond the provisions and intent of the law, adding to responsibility where it was not intended and causing fear of violation among those who desire to be its staunchest supporters. In some cases such regulations appear to be even in direct conflict with the expressed provisions of the law. Most important among these, and one which seems to be indefensible, is the regulation under which physicians' prescriptions, containing the minimum quantities, are held not to be refillable. This is certainly in direct conflict with the law, and in most instances will work unnecessary hardship on the general public. Our Association should declare itself in no uncertain terms of protest against that regulation.

PATENT AND TRADE MARK LAW REVISION.

It is not my purpose to anticipate the report of your Committee on Patents and Trade Marks. With the deep study that has been given this subject by Chairman Stewart it is not likely that one less well informed can treat the subject with hope of profit to you. Nevertheless it is my firm conviction and I believe it a duty to so say, that there has been no general effort for clearly understanding the needs of patent and trade mark law revision. There is some evidence of what in part at least may be prejudice dictated by self-interest. If American pharmacists and the public in general do not awaken to an active intelligent understanding, it is barely possible that they may have changes in the patent and trade mark laws imposed upon them, of which they had no thought at all, and which possibly may shock their sense of justice.

THE STEVENS PRICE MAINTENANCE BILL.

The maintenance of prices on articles of proprietary character, not involved with agreement between manufacturers, or other sources of supply, is in my

opinion a positive necessity. The Stevens Bill may be regarded a proper medium for crytallizing favorable sentiment toward such price protection. On that account it should have the hearty endorsement of every pharmacist and of this Association. The distribution of proprietary articles constitutes a large part of the business conducted in most every retail pharmacy. To be compelled to distribute them without profit is unjust, and what is more, results in conditions which surround many pharmacists and compels them to ignore true pharmacy because of the worry incident to making both ends meet.

STATE ANTI-NARCOTIC LEGISLATION.

Immediately after the so-called Harrison Bill became a law, and in fact in anticipation of its becoming a law, various persons or sets of persons became interested in drafting model bills for enactment in the several states, in order to make the respective state laws conform with the National Law, and in order also to make provision for some features not taken care of in the National Law which were believed to be necessary. It is not within my province to here enter upon a discussion of the merits or demerits of the several bills so resulting. It is altogether certain however that the anti-narcotic laws of nearly every state need amendment, in order to make them conform with the provisions of the National Law and to supply some needed provisions for the exercise of the police power not found therein. Undoubtedly retail pharmacists are largely interested in suitable state legislation to govern the distribution of narcotics, and it should be noted and kept in mind that the enforcement of state laws pertaining to narcotics must be largely if not altogether under the supervision of pharmacists. Any bill or law which fails so to provide should on that account alone be condemned. The subject I cannot well dismiss without expressing it to be my opinion that the Model State Anti-Narcotic Bill of the N. A. R. D. is the best and most comprehensive of its kind ever presented.

THE SINGLE STANDARD.

In connection with the Federal Food and Drugs Act as also in connection with state laws of that character much has been said in favor of eliminating the so-called double standard as it concerns drugs. The objection, frequently well grounded, that the double standard gives occasion for fraud and misrepresentation is a constant source of contention. In a paper read before the American Chemical Society by Dr. James H. Beal a solution for the difficulty is well pointed out. It is made plain by him, that all well grounded objections to the Federal Law and to the state laws which follow it, are based upon the prescribed methods for showing a variation from the official standard. There is absolutely nothing in the law, which would prevent the promulgation of a regulation to make impossible misrepresentation and subterfuge under the law as it now is.

PUBLICATION OF FORMULA.

Because of an ordinance enacted by the New York City Board of Health the question of requiring publication of formula for all proprietary medicines sprang into national prominence during the year. It may not be denied that the public or its qualified representatives should have some knowledge regarding the potent drug content of proprietary medicines, but it would seem both unnecessary and unfair to require complete publication of formula. This would mean the destruction of recognized property rights without compensating return to the general public. It seems to me that the advocacy for complete publication of formula is not grounded so much on a desire to protect the public welfare as on a possible desire to destroy the sale and use of proprietary medicines, which, notwithstanding their frequent condemnation are often serving the best interests of the public. It must be recognized however that the agitation for formula publication is growing, and that it finds many supporters among those who believe the public entitled to know

the potent drug content of such preparations, but who have no desire to destroy property rights. Our Association is in a splendid position to serve the best interests of all concerned in this very important matter, without giving aid to those who would proclaim public well being, as a guise for covering up the aims of prejudice and misdirected self-interest.

THE NATIONAL DRUG TRADE CONFERENCE.

The necessity and usefulness of the National Drug Trade Conference to pharmacy is urged by the best men of our Association. Personally, I have been unwilling to admit that to this time it has rendered service equal to its opportunities and which might not have been better rendered without its existence. Gladly will I agree that the Conference may become a most important factor in the correct disposition of legislative questions concerning the various branches of pharmacy, and also medicine as connected therewith.

Though denied at our Detroit Convention the right to have such views published, I beg again to say that in my judgment it is a most serious mistake and against the welfare of our Association to be as such represented in the Conference. Delegate representation therein for our Association, because of the various interests combined in this body, augments directly the number of representatives of one or more such interests, thus having a tendency to cause dissatisfaction and distrust. The Conference was called into life under the auspices of this Association and its connection therewith should properly be limited to a general supervision and a furtherance of good will, all of which may be splendidly accomplished by this Association furnishing the presiding officer for the Conference who should be without voice in its conclusions. In this connection may I also give expression to the personal opinion that an element now finds place in the Conference whose aims and interests are in direct conflict with the best interests of retail pharmacy, and which is representative of the greatest evil now confronting it. Admittedly the Conference is to provide agreement and mutual understanding among the various branches of pharmacy, a spirit of conciliation and fairness toward each other, as based upon understanding and common endeavor. It must not be out of mind however that business interests, which are so directly in conflict with each other, as are those whose continued existence depends either upon the physicians' dispensing evil, or its elimination, cannot lastingly work in common. In order to serve a just cause well it should not be placed in a position of having to entertain a compromise with evil.

STATE SUPERVISION OVER COLLEGES AND SCHOOLS OF PHARMACY.

Practically without state supervision many of our colleges and schools have rendered immeasurable and inadequately compensated service to pharmacy. They have not only kept pace with progress and advancement, but have been the primary cause of it. We have had an opportunity in them to observe a period of development of a voluntary nature. In late years however organized society in many states has learned to prescribe requirements which have the force of law, and a tendency on the part of other states to enact such laws seems to be growing. A higher standard and development voluntarily undertaken is based upon the highest ideals and loftiest aims for which state supervision is unnecessary. On the other hand when higher requirements are to be enforced by law they open up opportunity not before existing for only a technical observance of the law letter and a consequent circumvention of the law spirit.

The College Pre-requisite may have a distinct tendency to create colleges for profit. If the state would prescribe higher requirements for all, it seems that it should also determine or at least supervise the means and instruments for meeting such higher requirements. Is it not time that the colleges and schools heretofore working against great odds in service of the ideal should undertake to secure legal safe-guards against what may be devoted to purely material ends;

against the prostitution of teaching pharmacy to serve personal gain? It may have been correct in the past to assume that the standard of colleges might well be left to those who govern them as also a decision on the qualification of their teaching staffs, but new conditions are being created. A college may be conducted to furnish and inculcate true and wide knowledge, and again it may be conducted to enable its students to qualify for meeting the limited, even though perfect requirements, of a State Board Examination. If the state is to prescribe provisions which shall govern the teaching institutions, and is to assume supervision of some sort over them, it rests with the existing institutions to advocate such provisions, and to submit themselves to such supervision.

A SURVEY OF PHARMACAL EDUCATIONAL METHODS.

Such survey was proposed last year by the Chairman of this Section and approved by it. The task is no small one, and involved with very many difficulties, but a start has been made through a Committee appointed for that purpose which will make its report at one of our sessions. The importance of the work, and the good which may result from it prompts me to ask for the Committee, which no doubt is to be continued, a hearty co-operation on the part of our colleges and schools.

THE INTERNAL REVENUE EMERGENCY LAW.

Because of concerted action on the part of all branches of the drug trade The Congress was pervailed upon last year not to impose a tax upon proprietary medicines, though it did impose such tax upon the consumer. As a matter of fact the tax does not reach the consumer at all, and to a large extent is drawn from the retail druggist, who does not share in the luxury. There is a growing opinion that the Government will need to continue an Emergency Revenue, and if this should prove true, our Association through its Legislative Committee should take steps to oppose the continuation of the tax on toilet articles, advocating if necessary, that it be placed upon articles of luxury with a view of reaching those who enjoy them.

LIMITATION IN THE NUMBER OF PHARMACIES.

There appears to be a growing discussion which in some manner would favor a limited number of pharmacies. Undoubtedly the growth of the chain drug store has much to do with this agitation. In a consideration of the subject we are first of all confronted with a legal situation which without fundamental change would make such restriction impossible. Advocates of such restriction seem to assume its possibility by reference to legislation which in many states governs the trafficking in liquor, but they overlook the fact that restrictions in connection therewith are founded upon changes in the basic law of such states. Aside from such restrictions specially engrafted into state constitutions, the fundamental idea continues therein, that all shall have equal, unlimited and like opportunities.

It is not however altogether impossible to limit the number of drug stores, if such upon matured consideration finally appears to be desirable. Inroads upon basic freedom of action have been made with reference to the distribution of alcoholic beverages, because a required majority of the whole people deemed this necessary. At least equal if not greater reason exists in the public mind today for restricting the distribution of narcotic drugs. Amendments to the constitutions of the several states are now in most of them comparatively easy to submit for decision. A constitutional amendment might be offered in most states, under which the right to distribute narcotics and their preparations can be restricted to one place of business for a certain number of population under license to be issued by the board of pharmacy. With proper provision for emergency distribution by physicians, there is but little doubt that such constitutional amendment would be favored by the whole people. It will be appreciated that with such fundamental

change and under a license system of that kind, it would be one of the very first conditions that the licensing board grant at least one license to every suitable applicant, before granting two or more to any one, and thus the number of licenses which may be granted would likely be exhausted by giving one to each applicant for one place of business. It may be fairly assumed, that even a so-called system of chain stores would find it difficult to adequately prosper if the permit to supply the legitimate needs for narcotics and their preparations were limited to one of its stores. The other stores would then not be drug stores. This thought is submitted for consideration in connection with the discussion referred to, and may in that respect serve a purpose.

A MODERN PHARMACY LAW.

Shortly after the Detroit Convention your Section Officers agreed upon a plan to interest pharmacists in all of the several states in the drafting of modern and uniform laws pertaining to pharmacy, to include the best of all of the present laws and such added features as will more properly meet present day advancement and needs. With the aid and approval of the Presidents of State Associations and State Boards of Pharmacy, a Voluntary Conference for undertaking this work was created to consist of a Representative from each State Association and State Board under the auspices of the Section on Education and Legislation. It is pleasing now to report that forty-two State Associations and forty-four State Boards of Pharmacy are represented in such Conference. A report of the work of the Conference will be made at the separate session on Wednesday morning, and sufficient time is now taken to merely refer to the intended work which has hardly gone beyond its preliminary stages. A continuance of the Voluntary Conference is most earnestly recommended because of the conviction that it is a splendid undertaking for this Section which in many respects is best suited to carry it on. The work as it progresses should find the widest possible consideration and discussion. It is recommended that there be allowed the Section for such work an annual appropriation of at least $100.00, until completed.

In closing this address I must not fail to express my sincere appreciation for the aid given me by the other officers of the Section, and particularly grateful am I for the contribution of papers and reports which there is reason to believe will make the sessions of this Section both enjoyable and profitable.

Chairman Thiesing of the Commercial Section then stated that the body had listened to the very excellent report of the Chairman on the Section of Education and Legislation, together with its suggestions and recommendations, and asked the pleasure of the assemblage regarding its disposition.

It was then inquired of the Chair as to whether it would be necessary to refer the address to a Committee of the Section on Education and Legislation which would meet on the succeeding day, whereupon Chairman Freericks stated that the usual course was to refer it to a committee of three, and it was so moved.

Chairman Freericks then put the motion and desired to know if it was the wish of the members to discuss any of the features of the report before referring it.

Dr. J. H. Beal stated that the nature of the report made it very difficult to discuss; that it dealt with a large number of subjects in a very interesting manner and with some in a very comprehensive manner, and he desired to add, in an admirable manner.

That it was one of the most remarkable addresses that he had ever had the pleasure of listening to, and as of course many present knew, he disagreed with the Chairman on the matter of the Drug Trade Conference; nevertheless, the

Chairman had pointed out some of the means in his paper by which it might be improved.

Dr. Beal further stated that fortunately the Chairman and he seemed to agree on the particular points discussed, and he therefore took great pleasure in seconding the motion to refer the address to a committee of three.

Prof. H. P. Hynson said that he more or less agreed with the Chairman in regard to the Drug Trade Conference, not in regard to its inefficiency, but in regard to the American Pharmaceutical Association's connection therewith. Chairman Freericks had so ably pointed out that the Drug Trade Conference was closely connected and allied with the American Pharmaceutical Association, and in his opinion the presiding officer should be elected by the American Pharmaceutical Association; that he desired to state that he was heartily in accord with that, and that the thought was in accordance with the idea of collating all the national associations in the United States. That the Chairman was in exact accord with him on the question of the House of Delegates; that he desired, however, to bring up the question while he was on his feet that Chairman Freericks had said that there had been already presented in the House of Delegates a modern and model pharmacy law, and that in his opinion this furnished an excellent example of what the functions of the House of Delegates should be: a collation of the State Associations for the consideration of such topics as a model pharmacy law; that the Chairman had made a very excellent address in favor of the restriction of delegates, and he was therefore very happy and hopeful over the prospect.

Prof. Newcomb then inquired whether it was the intention of the motion to refer the request for a hundred dollars for work of the committee to the Council. Chairman Thiesing stated that he believed that that would come in the form of a recommendation to the Council. Whereupon Prof. Newcomb stated that if he was in order he would like to make a motion to that effect.

Chairman Thiesing then stated that the committee could make a report on the matter and it would be referred then to the Council. On motion, receiving a second, the question was called for and carried.

Chairman Freericks then named as the Committee, Messrs. Packard, Claus and Snow.

Prof. Remington said that he had listened to the address of Chairman Freericks and desired to express his approval, not only that, but his appreciation of the comprehensive character of the report.

Chairman Thiesing of the Commercial Section announced that the next order of business would be a paper by Dr. James H. Beal for the Section on Education and Legislation entitled, "Desirable Legislation as an Aid to Maintain Pharmacy."

Chairman Thiesing stated that the next number on the program was a paper by Mr. W. H. Cousins.

Mr. Cousins said that he did not know his paper was to contain anything about legislation, so he had prepared a paper on "The Business Needs of Pharmacy."

After discussion the paper by Dr. J. H. Beal was referred for publication, discussion of the paper by Mr. W. H. Cousins was deferred until after presentation of the papers by Dr. Wm. C. Anderson and Professor H. P. Hynson.

Chairman Thiesing then announced the next paper for the Commercial Section, "How the College May Better Equip the Student for Business," by Dr. W. C. Anderson, and the one by Professor H. P. Hynson on "Commercial Training in Colleges of Pharmacy," for the Section on Education and Legislation. After reading of the papers and discussion Dr. J. H. Beal moved that the papers read and discussed be referred to the Publication Committee, seconded by J. C. McGee.

The question was called for and carried.

Chairman Freericks on resuming the chair said that he was certain Chairman Thiesing would give his consent to the announcement of the next two papers, he also stated that the report of the Commission on Proprietary Medicines had been referred to this session for discussion by the Council.

The paper by P. Henry Utech on "Present Method on Prescription Charges. How the Joint Consideration by Physicians and Pharmacists of the Change in the Method of Prescription Pricing can Serve to Produce a Better Understanding Between Them. The Possibility for Educational Advantages," and the paper on "Present Methods of Prescription Pricing," by Dr. A. O. Zwick, were referred for publication.

Chairman Beal then presented the report of the Commission on Proprietary Medicines in abstract.

(This report will be printed in full.)

Chairman Thiesing then resumed the chair and stated that in accordance with the by-laws, nominations of officers for the Commercial Section were in order.

Mr. R. S. Lehman of the New York, was nominated for Chairman. Dr. J. H. Dawson and Mr. W. H. Cousins were nominated for Associates.

Chairman Freericks on behalf of the Section on Education and Legislation stated that nominations for officers of that section were in order.

Frank H. Freericks was nominated for Chairman and R. A. Kuever for Secretary.

On motion Chairmen Thiesing and F. H. Freericks put the motion for adjournment until the next sessions of the respective Sections. Carried.

CAMPHOR FROM SHRUBS.

The Bureau of Science of the Philippine government is making a study of the plant known as *Blumea balsamifera*, known by the natives in the Philippines as "sambon" or "gabuen," and which produces camphor. The shrub is one of the most common weeds in the Philippines. It grows from 5 to 8 feet high, with a stem almost woody in texture, and has long been used by the natives of the Philippines as well as by natives of China for medicinal purposes. The Chinese in parts of Kwangtung and Kwangsi Provinces already distill considerable camphor from the plant, the chief drawback to the more extensive use of it being the amount of labor required to secure the gum. It is well to note in this connection that the Bureau of Forestry at Manila is introducing the ordinary camphor tree of China and Japan into the mountain districts of Luzon in large numbers for the purpose of building up future camphor production in the islands.—*Consular Report.*

Editorial

E. G. Eberle, Editor.....63 Clinton Building, Columbus, Ohio

THE PHARMACOPŒIA AS AN EDUCATIONAL PROBLEM.

WE hope in this or in the succeeding issue to present a paper read before the Section on Practical Pharmacy and Dispensing by Mr. Joseph Weinstein under the above title.

When the last U. S. Pharmacopœia was issued, physicians and pharmacists met in nearly all of the larger cities to discuss the changes therein, and with a sincere purpose of arriving at a better understanding of this official guide.

Soon we will have not only a new Pharmacopœia, but also a revised edition of the National Formulary, offering an excellent opportunity for stimulating co-operation between physicians and pharmacists, conducive to better pharmacy, more scientific practice of medicine and greater efficiency in service.

Those who participated in the endeavor to arrive at a better understanding of the Pharmacopœia when the last edition became effective, recognized some defects in the methods pursued at that time, which only infers that they have profited by experience.

It occurs to the writer that the weekly or monthly meetings now quite general among physicians, dentists and pharmacists may easily be adapted for the purpose of studying more closely the Pharmacopœia and National Formulary. The chairman should be assisted by associates from all three professions, each one selected because of his acquaintance with one or the other of the subjects that will be presented in connection with the study. In that way no source of related information will be overlooked.

It would be helpful at the meetings to have abstracts of the final changes in the Pharmacopœia or proof sheets; the same applies to the National Formulary. Such interest will develop the spirit of improvement in the pharmacist and cultivate the physician's acquaintance with these two books, so essential for the scientific practice of medicine and pharmacy.

Another thought brought out in the paper referred to, was further education of those pursuing pharmacy and particularly for those who have not the advantages of a college of pharmacy education.

Objections may be advanced by some, but conservative consideration will reveal that such a plan is simply a concession to modern thought, that education is not for youth alone. It is exemplified in the expanding development of school and university extension. State and Nation have undertaken to provide education, in its limited school sense, without regard to years of the applicant. Even the farmer avails himself of the opportunity, while in every other line of work, wherein knowledge and science may be helpful, instruction is being offered.

New York University in compliance with a request of the Public Health Council has provided two short courses in preventive medicine. Primarily, these are intended for public health officers, but all who are interested in public health

problems may take advantage of the opportunities offered. One course requires six weeks' attendance, the other, one week's stay in the city and the studies may be completed at home. It is realized, that most of those participating take the course for some particular needs, and accordingly the Public Health Council inquires into the experience of those attending, so that the course may be outlined for their special needs and direction given for their studies.

At present there need be no embarrassment for engaging in study at home or elsewhere, simply because of years. The invitation for further study is universal, in fact, it is becoming essential for every individual to be busy with some definite course of study or self-improvement.

The objective of continued study is usually for self-culture, but this is no reason why the education should not be sought for improving the individual's qualification in the trade or calling in which he serves the public. Examples may be cited of persons who take examinations in various lines for refreshing their technical knowledge and testing their advance in the technique of their trade. Physicians avail themselves of post-graduate courses for like reasons. Such methods can hardly be made compulsory, their acceptance must remain an individual response. If annual examinations were required of pharmacists, it might embarrass the boards, and pharmacists might experience discomfort. The value, we desire to point out, is the worth of the resolution "to keep on learning," it is this initiative, which seems to be becoming more general, in professions as well as trades—the provision of educational opportunities, without concern for the pupil's years.

The suggestion of the author of the paper was more particularly directed to schools that in some instances have taken up the work of assisting ambitious druggists, who realize and appreciate that they ought to be better informed regarding progress in the science and art of pharmacy. This need not remain the narrow precinct, local druggists' associations can readily formulate a plan for mutual and general advancement.

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PRICE MAINTENANCE.

THE American Pharmaceutical Association is on record in favor of a uniform price maintenance measure and every effort should be made to promote the passage of a law which will accomplish this.

In order to make possible the most effective work in that direction decisions that have heretofore been rendered and the adverse arguments advanced should be carefully analyzed. We are agreed on what is desirable from our viewpoint, but it does not embrace the counter-argument or the views of the opposition, and these are really the points we should study.

The substance of previous statements made in these pages are repeated in saying that cut-prices may destroy the sale of a product, by some declining to handle an article, while others who have made this a leader, in order to attract trade, discontinue selling it after a time and exploit other preparations instead. The dealers in the small towns must reduce their prices to conform to the cut-rate stores of nearby cities, or lose the business of those informed regarding the

lower prices obtainable. There is the further possibility of creating distrust relative to the genuineness of the product. The manufacturer is liable, not only to suffer loss of trade, but have his publicity campaign become valueless. The producer is therefore as deeply concerned in the maintenance of prices as the retailer.

Thus far the courts have, to all intents and purposes, decided that the owner of the goods alone has the right to say at what price they shall be sold. If therefore a complete transfer is made from the manufacturer to the retailer then the right to fix the selling price is also conveyed. In order that the manufacturer may still control the selling price, he must either consign the goods or at least retain a vendor's lien of some kind thereon, and effective until the package passes to the consumer. The terms, under which the goods are shipped to the retailer, would have to be legal; if unsold, the manufacturer would be compelled to take back the goods at the price which the retailer would have paid him, if sold. Very likely the law would demand that each and every package be marked, so that the consumer-purchaser has a knowledge of the terms under which the same came into the possession of the retailer.

This proposition would hardly meet the approval of the small manufacturer, because in order to sell in profitable quantities under such conditions, would necessitate large financial resources. It also further indicates a possibility that strong financial concerns might be perfectly willing to adopt selling methods that contribute advantages to them and are disadvantageous to their less fortunate competitors. The result might finally be that the profit fixed by the former would be inadequate for a small retail business and productive of greater dissatisfaction than are the present methods. It is only reasonable to expect consideration from Congress of the right of the purchaser to patronize the cheapest market as well as his privilege to dispose of his purchases at any price he may desire or be compelled to.

These suggestions and deductions are only presented so that offensive and defensive preparation may be perfected in the interest of a price protective measure before Congress convenes.

The following thoughts are offered: A patentee must protect his rights in the courts, which naturally implies that he has bought some kind of protection from the government. When a manufacturer copyrights a name, he also is protected against unlawful use of the copyrighted name by others. Why, if in the first place the name of an article is copyrighted, could not the government grant additional protection of the sale-price on the same? Under the proviso that if the retailer is not willing to sell at the specified price, he will have the right and privilege of returning the goods to the manufacturer or jobber from whom obtained and receive the fixed wholesale price.

Such protection might be bought for a designated sum paid to the government or, as additional revenue is necessary, price protective stamps might be affixed to the goods. Then the government would be giving something in return for taxation, a benefit which manufacturers would be willing to pay for. The government insures against loss by mail and this is not altogether foreign to the idea suggested.

NEW TAXES.

ONE subject that is quite certain to engage the attention of Congress at its next session is additional taxation. The so-called war taxes of a year ago have not made up the deficiency occasioned by the decreased receipts. Imports are not materially increasing and sugar will soon go on the free list, suggesting further decrease of such revenue from import.

A large Army and Navy necessarily will involve extensive appropriations and these are apt to become permanent. By proper economy, expenditures in other directions might be materially reduced and, comments the *Saturday Evening Post,* "Also no doubt whiskers might be grown on a pumpkin." We have long ago become reconciled to the fact that it is very much easier to establish offices and precedents for expenditures than to retrench. This is not only true with the government but in business and with other organizations.

Where will the additional revenue come from? The question is one that requires the most serious consideration and the solution should be arrived at by establishing a system that will more specifically provide for the future. The present deficit will easily be dealt with, one way or another, even though it may mean unjust taxation for some.

The immediate needs will possibly be derived in part from further stamp tax and some members of Congress still look to the lost opportunity of such taxation on proprietary medicines. Every effort should be made to prevent such attempt, for this means additional taxation of the retail druggist. The tax on telegrams, for example, is not paid by the Company for they charge the price of the stamp in addition to the message; the buying public will not pay for the extra stamp tax on merchandise and it is impractical to make the charge.

There should be an export tax on war material; the income tax should be imposed on a far greater number than under present exemptions. One cent letter postage should by all means be discouraged, in fact, an increased rate might be the easiest method for the production of revenue and every one would be contributor.

Finally however the provisions for revenue should come from a source that will not only produce revenue continuously but at the same time encourage American manufacturers. We do not desire to make a political application, but our tariff system has frequently been prompted by local conditions and the political strength which supported them. When the war is over we will have to adjust ourselves to the conditions which will develop after peace in Europe has been declared. We do not care to foist personal opinion on our readers as to what they will be. Each one has his or her views and so also on the tariff question. This much however we can all be agreed upon, that if the question was studied by unprejudiced minds, by men who are qualified morally, intellectually and by experience, they could formulate a scientific method for making tariffs.

A movement is under way to have Congress provide for a non-political tariff commission. It remains to be seen whether public sentiment can be aroused to sterilize the tariff as a political issue and insist on making provisions for a permanent tariff policy for the United States, worked out by specialists and experts.

We simply submit this important subject for consideration because in our belief, industries allied and closely related to pharmacy may be benefited and so that as citizens our readers may participate, after carefully and thoughtfully studying the possibilities. Business men are beginning to take deeper interest in matters that shape and regulate their activities and whenever the public positively determines that a thing shall be done, Congress and legislatures yield.

E. G. E.



HARRY V. ARNY, PH. G., PH. D.,
President, American Conference of Pharmaceutical Faculties.



FREDERICK J. WULLING, PH. G., LL.B.,
Retiring President, American Conference of Pharmaceutical Faculties.

Scientific Section

Papers Presented at the Sixty-Third Annual Convention

THE ASSAY OF BALSAM OF PERU.*

FRANCIS D. DODGE AND ALFRED E. SHERNDAL.

"Balsam of Peru" is the name applied to the resinous exudation obtained from the tropical tree, *Myroxylon Pereirae,* occurring in Central America, principally in the republic of San Salvador.

The balsam comes into commerce from the port of San Salvador; is of some medicinal importance, and also finds a limited application in perfumery.

As regards its chemical composition, the early investigations of Delafontaine,[1] Frémy,[2] and Kraut,[3] showed the presence of neutral aromatic esters (benzyl benzoate and cinnamate), amounting to over fifty percent. The acid resin, according to Kachler,[4] yielded about sixty percent of protocatechuic acid.

A more thorough examination of the balsam was made by Thoms,[5] who found the cinnamein (or neutral esters) to consist principally of benzyl benzoate and cinnamate, with possibly some hydrocinnamic ester.

He also isolated a new alcohol, peruviol, to which he assigned the formula, $C_{13}H_{22}O$. This compound, a light liquid with characteristic odor, was later found by Schimmel & Co.,[6] to be identical with nerolidol, $C_{15}H_{26}O$, the sesquiterpene alcohol isolated by Hesse and Zeitschel[7] from the high-boiling fractions of oil of orange flowers.

For the assay of the balsam, a rather large number of tests have been proposed, and are embodied in the various pharmacopœias and similar works. Those depending on color reactions are in general unreliable and of limited value. Dieterich[8] lays much stress on the acid value, saponification value, Cinnamein content, and saponification value of the latter; and the determination of these analytical constants is almost universally required by the best authorities. Yet it is obvious that such values are far from being absolutely characteristic: that they are insufficient to demonstrate the purity or authenticity of a sample is a fact unpleasantly brought to our attention by the appearance in recent years of imitation or "synthetic" balsams almost indistinguishable from the natural product.

* Read before Scientific Section, San Francisco Meeting.

[1] Zeitschr., 1869, 156.
[2] Ann. 30, 330.
[3] Ann. 152, 129.
[4] Ber. 2, 512.
[5] Arch. d. Pharm. 237, 271.
[6] Berichte, April, 1914.
[7] J. f. prak. Ch., 1902, 504.
[8] Analyse de Harze.

Evers[9] patented a mixture of styrax, esters, and gum resins, which was asserted to be fully identical with the natural balsam; and similar products, bearing the names "Perugen" and "Perugran" have become articles of commerce.

The Perfumery and Essential Oil Record, in a note on this subject,[10] remarks: "Samples submitted to us from M. Schultz & Co., Hamburg, are remarkable imitations of natural balsams, and in chemical and physical characters are almost indistinguishable from the genuine products." And as far as the pharmacopœial standards and usual tests go, we can only confirm this statement, as following analyses show.

No. 1 is an artificial product recently examined; No. 2 is an average sample of some thirteen lots, of direct importation, and, as far as we can ascertain, of undoubted authenticity.

	Sp. Gr. at 25°	Acid Value	Percent Cinnamein	Sap. Value of Cinnamein
No. 1	1.1542	59.68	62.3	254.9
No. 2	1.1535	65.20	54.1	235.9

Jensen[11] also gives figures showing close approximation in these constants.

Such "synthetic" products naturally become objects of suspicion as possible adulterants of the genuine and more expensive balsam, and their detection in mixtures becomes of some importance.

For this purpose the determination of the iodine value of the cinnamein, or neutral portion of the balsam, has been proposed. Jensen (l. c.) in examining three samples, one of which was imitation, found the iodine value of the natural cinnamein, 25.5; of the imitation, 1.5.

We found on Sample 1 (above) I.V. 3.6; on Sample 2, I.V. 21.0. Dieterich,[12] however, reported the analyses of various samples, in which the I.V. of the imitation cinnamein was found as high as 27.5. If these results are correct, it is evidently unsafe to put much reliance on this test, for the possibility is not excluded that substances may be added to the imitation product to increase its iodine value.

Benyzl benzoate shows no absorption of iodine: we found that pure benzyl cinnamate, obtained by freezing the natural cinnamein, gave an I.V. of about 7.0. Jensen (1. c.), on fractioning natural cinnamein in vacuo, found that the first 10% of the distillate had the I.V. 116, and we obtained a similar value for the crude peruviol, described below.

Optical activity is also characteristic of the natural cinnamein, and is due to the peruviol, which Thoms found to have $a_D = +13°$. The determination of the rotation of the crude cinnamein is, however, impracticable.

Peruviol, with its high iodine value, and dextro-rotation, appears to be the most characteristic constituent of the balsam, and after some experiment, the following simple method of isolating it was devised.

Peruviol Test.—Twenty gms. of balsam are saponified by heating one hour on the water-bath, with frequent shaking, in a liter flask, with 20 gms. of 25% potassium hydroxide. Steam is then passed through the mixture, and the dis-

[9] Pharm. Ztg. 49, 524.
[10] March, 1914, 86.
[11] Pharm. J., 1913, 210.
[12] Perf. and Ess. Oil Rec., 1914, 89.

tillate collected in 100 or 150 cc. flasks with narrow, graduated necks. From natural balsams, we obtained in this way, in 300 cc. total distillate, from 0.7 to 0.9 cc. of light oil. Imitation balsam gave only traces of heavy oil.

The crude peruviol from 100 gms. balsam amounted to 4.5 cc. and showed the Sp. Gr. 0.917 at 25°, a_D—10°. Thoms found for a purer product, Sp. Gr. 0.886 at 17.5°, a_D—13°. Our preparation contained evidently some benzyl alcohol, and, in fact, by saturating the aqueous distillate with salt, 8 cc. of oil were obtained, with Sp. Gr. 1.038 at 25°, inactive, and almost completely soluble in 40 volumes of water.

Natural cinnamein contains, then, about 4% of peruviol, and benzyl alcohol is practically the only other alcoholic constituent. From 100 gms. of imitation balsam, only benzyl alcohol (Sp. Gr. 1.042 at 25°, inactive) was obtained. For identification, the peruviol from 20 gms. of balsam is sufficient. It is a colorless oil, of characteristic odor, soluble in 70% alcohol, and showing an iodine value of about 116.

If 20 gms. of balsam are distilled in the manner described, without saponification, less than 0.1 cc. of light oil is obtained, with a small quantity of heavy oil (benzyl benzoate). This indicates that the peruviol is present mostly as ester in the balsam.

The following are typical analyses from our records:

	No. 30	No. 145	No. 192	No. 776
Sp. Gr. at 25	1.1462	1.1507	1.154	1.154
Acid Value	67.3	71.0	72.8	67.6
Cinnamein	58.3%	54.6%	54.6	54.7
Sap. Val. of do.	230.5	235.1	242.4	236.3
Peruviol (ex 20 gms.)	0.9 cc.	0.9 cc.	0.65 cc.	0.85 cc.

The peruviol determination appears to be a very reliable indication of the quality of a balsam. Adulteration with fatty oil or rosin, would lower the yield of peruviol: if copaiba were present, the peruviol would be contaminated with the oil of copaiba, and would show a diminished solubility in alcohol, and a lower, or possibly a lævo-rotation.

ACID CONSTITUENTS OF PERU BALSAM.

Thoms (l. c.) found benzoic and cinnamic acids present in the ratio of about 3 to 2, using for the determination of the latter the oxidation method of Liebermann, which is based on the reaction:

$$C_6H_5CH{=}CH{-}COOH + O_2 = C_6H_5COOH + 2CO_2 + H_2O.$$

We found the acids in about the same proportion in the balsam, but in the imitation practically only benzoic acid.

The analyses were made in the following manner. Samples of natural and imitation cinnamein were saponified, the solutions evaporated to dryness, dissolved in water, extracted with ether, acidified, and the liberated acids separated and dried. Weighed amounts of acid were then dissolved in N/2 alkali, and the solutions diluted to contain 1 gm. in 100 cc. For each titration, 5 cc. were run into 25 cc. of N/2 permanganate; after standing one-half hour, the excess of permanganate was titrated in the usual manner with standard oxalic acid. For comparison, samples of benzoic and cinnamic acids were also titrated. According

to the above equation, one gm. cinnamic acid should require 135.1 cc. N/2 permanganate.

ASSAYS.

	(Time)	(cc. $KMnO_4$ per gm.)	(Percent Cinnamic Acid)
(1) Benzoic acid	½ hr.	6.0	4.4
(2) do	do	8.0	5.8
(3) Cinnamic acid	do	141.8	104.9
(4) do	do (warm)	157.8	116.8
(5) Ex balsam	½ hr.	57.0	42.1
(6) Ex imitation	do	6.0	4.4

These results were far from satisfactory; apparently the oxidation of cinnamic acid was not quite so simple as the equation indicated. In fact, when an acid permanganate solution was used, even more erratic values were obtained, e. g. (with permanganate containing 2% H_2SO_4).

(7) Cinnamic acid.....	5 min.	248.9 cc. $KMnO_4$ per gm.	
(8) do	20 min.	263.1	do
(9) Ex balsam.....	5 min.	119.4	do
(10) Ex imitation.....	5 min.	19.8	do

It was evident that to secure any useful values, a more careful modus operandi was necessary: it was soon found that better results were obtained when the oxidizing solution was gradually added.

(11) Cinn. acid.....	1. gm. required	142.3 cc.	
(12) do	0.1 gm. do	13.8 cc. (138.0 cc. per gm.)	
(13) do	0.1 gm. do	13.7 cc. (137.0 cc. per gm.)	(MgO)

With permanganate always in excess, the results were not uniform.

(14) Cinn. acid	.05 gm. req. 7.95 cc.	(25 cc. used)		(159 cc. per gm.)
(15) do	.1 gm. req. 14.6 cc.	do		(146 cc. per gm.)
(16) do	.1 gm. req. 14.4 cc.	do	(MgO)	(144 cc. per gm.)
(17) do	.1 gm. req. 14.9 cc.	do	(MgO)	(149 cc. per gm.)

In Nos. 13, 16, and 17, the solution contained $MgSO_4$ in the proportion: $2KMnO+MgSO_4$, to ensure constant neutrality.

With acid permanganate, the following values were found:

(18) Cinn. acid	.1 gm. req. 24 cc.	($KMnO_4$ added slowly)	(240 cc. per gm.)
(19) do	.05 gm. req. 13.9 cc.	(25 cc. used)	(278 cc. per gm.)
(20) do	.10 gm. req. 29.5 cc.	(45 cc. used)	(295 cc. per gm.)
(21) do	.10 gm. req. 28.7 cc.	(50 cc. used)	(287 cc. per gm.)
(22) do	.10 gm. req. 27.0 cc.	(75 cc. psed)	(270 cc. per gm.)

In Nos. 21 and 22, the mixtures were allowed to stand one hour before titrating back. The oxidizing solution contained sulphuric acid in the proportion: $2KMnO_4+3H_2SO_4$.

These results in acid solution were unexpected. Benzoic acid is supposed to be unaffected by the reagent under these conditions, and the slight reduction of permanganate which we observed must be due to impurities. For example:

(23) Benzoic acid	.10 gm. req. 0.5 cc.	(10 cc. used)	(5 cc. per gm.)
(24) do	.10 gm. req. 1.0 cc.	(25 cc. used)	(10 cc. per gm.)
(25) do	.10 gm. req. 1.2 cc.	(5 cc. acid $KMnO_4$)	(12 cc. per gm.)
(26) do	.10 gm. req. 0.7 cc.	(25 cc. used)	(7 cc. per gm.)
(27) do	.10 gm. req. 0.7 cc.	(25 cc. acid $KMnO_4$)	(7 cc. per gm.)

A solution of sodium benzoate was purified by heating several days with excess of permanganate; the latter was then reduced with a little bisulphite, and the solution diluted to contain one percent of acid.

(28) 10 cc. of this solution required 0.45 cc. (25 cc. used) (4.5 cc. per gm.).

A sample of acid prepared from the recrystallized calcium salt gave no better result, and the cause of this slight action on the permanganate remains unexplained.

In the case of cinnamic acid, it is remarkable that the values in acid solution are about twice the theoretical, approaching a limit even with a large excess of reagent (No. 21 and 22). It is not incredible that benzoic acid in the "nascent" condition may be more readily oxidized in acid solution, and a portion completely burnt to carbonic anhydride and water. But, if so, one would hardly expect any constancy in the amount of oxidizer used.

It appeared of interest to determine the actual amount of benzoic acid produced by oxidation in neutral and acid solutions, respectively.

(29) 10 cc. of a solution of sodium cinnamate containing one percent of the acid were run slowly into 25 cc. N/2 permanganate. After one hour, the excess of reagent was reduced by oxalic acid, and then the titration continued as usual with oxalic and sulphuric acids. Required: 14.3 cc. 143 cc. per gm.). The solution was then extracted with ether, and the ether solution evaporated to constant weight. The white crystalline acid weighed 0.076 gm. (calc. 0.082 gm.), and on titration required 6.2 cc. N/10 alkali, equivalent to 0.0756 gm. benzoic acid.

(30) 10 cc. of the cinnamic solution previously used were run into a mixture of 50 cc. permanganate and 15 cc. normal sulphuric acid. After one hour, titration as before. Required, 27.3 cc. (273 cc. per gm.). The acid taken out by ether, weighed 0.052 gm. and on titration, required 4.22 cc. N/10 alkali, equivalent to 0.0515 gm. benzoic acid.

In this last experiment, there is a deficiency in the yield of benzoic acid amounting to 0.030 gm. Assuming this to have been completely oxidized, according to the equation:

$$C_7H_6O_2+O_{15}=7CO_2+3H_2O$$

for 0.03 gm., 0.233 gm., or 14.7 cc. N/2 permanganate would be required, which is about the difference observed in the neutral and acid titrations on 0.10 gm. cinnamic acid. Hence it appears that on oxidation by permanganate, in acid solution, under the conditions described, about 36% of the cinnamic acid is completely oxidized to carbonic anhydride and water.

For the examination of the mixed acids from the balsam, however, the procedure of No. 11-13 will give useful results. The presence of cinnamic acid is not, of course, conclusive evidence of the purity of the balsam, for the addition of a cinnamic ester from some other source is not inconceivable. For the simple detection of the acid, the solution obtained in the usual course of analysis, by saponifying and titrating 1.5 gms. of cinnamein is evaporated to remove alcohol, made up to 25 cc. and filtered. The filtrate (containing about 1% cinnamic acid) should give a heavy precipitate with 2 cc. of a strong solution of manganese sulphate.

LABORATORY OF THE DODGE & OLCOTT CO., Bayonne, N. J.

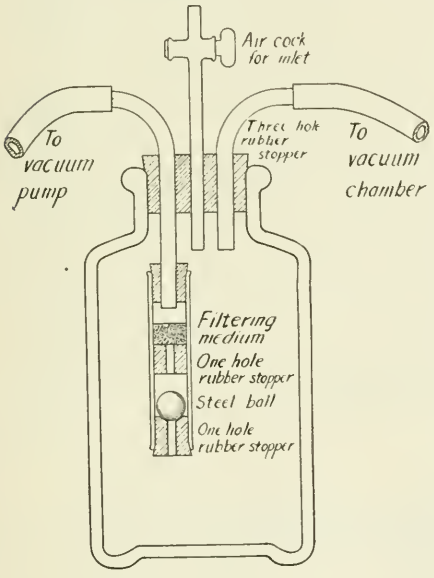
A SAFETY CHECK VALVE FOR LABORATORY VACUUM PUMP.*

R. C. HOLMES, PHAR. D.

Laboratory workers, having occasion to use the Chapman, Richard or Sprengel forms of vacuum pump, have, no doubt, experienced difficulty in preventing the water from regurgitating into the vacuum chamber. The vacuum pumps, generally, are provided with a disc check valve, and, while new, this serves the purpose fairly well, but after some use the valve becomes congested with dirt and trouble ensues. The common remedy is to interpose a flask or bottle between the pump and principal chamber, thereby collecting the water which can readily be removed.

Under conditions of a varying water pressure the chamber for collecting water is insufficient and leads to exasperating results. Therefore, under pressure of necessity, the device here presented was constructed and used with very gratifying results.

A bottle, capacity one quart or more, is fitted with a three-hole rubber stopper and glass tubing, bent and inserted as seen in the diagram. On the end of the tubes leading to the vacuum pump, inside of the bottle, is fitted the check valve which can easily be constructed in a few minutes.



Cut a piece of glass tubing, from one-half to three-quarter inches in diameter and about four inches in length. Cut a cylindrical rubber stopper to fit inside of the glass tube; bisect it transversely, first boring a longitudinal hole. Any convenient filtering medium may be placed between these two stoppers, such as cotton or asbestos, before adjusting them in the tube about one inch from the top. Fit a one-hole stopper in the end of tube near the filter so that it may be connected with the tube to pump. Lastly, obtain a steel ball which will slip easily into the glass tube and fit a one-hole rubber stopper into the end of the tube. The inner end of the stopper must be so constructed as to form a tight seat to hold the ball. This may be readily accomplished by heating the ball on a wire gauze over a Bunsen flame and pressing the end of the stopper over the hot steel ball so that it is imbedded about half in the rubber.

It will be found that this valve will immediately check the influx of water to the bottle when the water pressure is released, at the same time maintaining absolutely the vacuum pressure in the system.

It is best to entirely remove the disc valve of the pump proper so that there will be an unobstructed opening for the air exhaust. In the event that the water is reasonably free from dirt the filter may be omitted.

Research Laboratory, Bristol-Myers Co., Brooklyn, N. Y.

* Read before Scientific Section, San Francisco.

STANDARDS FOR ABSORBENT COTTON AND ABSORBENT GAUZE.*

DR. FRED B. KILMER.

The Author contends that U. S. P. test for absorbent quality of cotton is inadequate—glycerin and soap will increase the apparent absorbency. He suggests tests to be adopted for cotton in the forthcoming Pharmacopœia and also gives tests to which plain absorbent gauze should be subjected. Specification for cotton used in manufacturing are given.—Ed.

The large use of absorbent cotton and absorbent gauze for surgical dressings and in the arts has, from time to time, brought up the question of their standardization.

In the present day practice of surgery, generally only plain sterile gauze or cotton is required; that is to say, cotton or gauze not impregnated with an antiseptic.

In a paper published in the "Journal of the Society of Chemical Industry," October 31, 1904, the writer discussed the problems involved in the preparation of absorbent cotton and gauze for surgical purposes, and called attention to the fact that for the most part the Pharmacopœial standards are open to criticism.

The standard for absorbent cotton in the United States Pharmacopœia, Eighth Revision, seems to be inadequate as to its test for absorbency.

Absorbent cotton even when heavily charged with impurities, when pressed in the hand and placed on the surface of water, will sink. The Pharmacopœia failed to prescribe anything definite as to the amount of water to be used. This authority also prescribed that when purified cotton, previously pressed in the hand, is placed on the surface of cold water it will absorb the water and sink, and the water shall not acquire an acid or alkaline reaction.

The test of sinking in water is a test neither of purity nor absorbing power. Soap or glycerin will increase the apparent absorbency.

The British Pharmacopœia of 1914, has the following as a standard for what, in this country is termed "absorbent cotton."

GOSSYPIUM—COTTON—SYNONYM—COTTON WOOL.

Cotton consists of the hairs of the seed of Gossypium herbaceum, Linn., and of other cultivated species of Gossypium, freed from fatty matter.

Characters and Test.—In long, white, soft filaments, each consisting of an elongated cell, appearing, when seen under the microscope, as a flattened, twisted band with slightly thickened rounded edges. Inodorous and tasteless. Soluble in ammoniacal solution of copper oxide. Readily wetted by water, and not imparting to it either an alkaline or an acid reaction. Ash not more than 0.5 percent.

This standard would seem to be loose and lacking in definiteness, and in the writer's experience several low grades of absorbent cotton can be made to meet these requirements.

A considerable quantity of purified cotton, otherwise known as absorbent cotton, is now used in the arts and especially in the manufacture of explosives. In some

* Read before Scientific Section, San Francisco

instances the Ordnance Department prescribed standards, three of which are here noted.

COTTON FOR SMOKELESS POWDER—U. S. NAVY DEPARTMENT SPECIFICATIONS.

Unspun cotton, prepared for nitrating purposes by bleaching cotton wastes and thoroughly washing to remove bleaching materials and lime salts; to contain not more than 7 percent moisture, not more than 0.4 percent materials which can be extracted by ethyl ether, and not more than 0.8 percent ash; to contain only traces of lime salts from the bleach and no hypochlorites; to be free from foreign matter of any kind and to be of such texture as will easily nitrate by the usual methods.

COTTON FOR NITRATION—SPECIFICATIONS FRENCH ORDNANCE DEPARTMENT.

Cotton to be furnished must be new, properly scoured and white. It must be free from any mixture with wastes, whatever they may be, coming from spinning mills, or factories working cotton for spinning mills. Heating chlorine bath, used for purpose of whitening, is absolutely forbidden. Any addition of coloring material, particularly blue, on purpose of modifying appearance of goods, is forbidden.

Moisture obtained by heating at 100 deg. C. up to constant weight, must never be over 6% of weight of dry cotton. However, when moisture even over 6%, is not more than 10%, delivery may be accepted, subject to rebate as shown per article nineteenth hereinafter.

Ash, fats (average) insoluble products in diluted sulphuric acid, and other material than cotton fibres, obtained as said in note herewith, must be respectively less than—0.30%, 0.30%, 0.75% and 1-5000. Cotton must be absolutely free from active chlorine. Rate of combined chlorine (Cl) must never be over 3+10000 of weight of dry cotton.

SPECIFICATIONS TO GOVERN THE SUPPLY OF COTTON FOR THE MANUFACTURE OF GUNCOTTON—ROYAL ORDNANCE FACTORIES, ROYAL ARSENAL, WOOLWICH.

To be bleached cotton cellulose, specially suitable for the manufacture of Guncotton.

To consist largely of fibres of long staple, preferably twisted, and to contain as little as possible of felted unspun, short fibre cotton, or dust, technically known as "fly."

The cotton must not show more than the following figures calculated as percentage on the dry material:

Moisture	7.0 per cent
Oily matter	0.6 " "
Soluble on boiling one hour in 3 percent Caustic Soda	5.0 " "
Reduction of Fehlings' solution (11 Vol. to 2 Vols. of water on heating 15 minutes at 100 degrees C. (Cu_2O)	1.0 " "
Mineral matter	0.5 " "

Except as regards the above figures, it must be entirely free from organic matter other than pure resistant normal cellulose, and on dyeing with a basic dye such as Fuchsine (Rosaniline Acetate), the fixation of color must be slight and uniform, and must show no deeply dyed particles of fibres.

Following a long series of experiments in the laboratory with which the writer is connected, the following was worked out as a rational standard for purified or absorbent cotton. It was found that this standard is one to which the brands of the leading reputable makers in this country would be found to comply. In other words, this standard is attainable, and would exclude cottons of a low grade or to which foreign substances had been added.

GOSSYPIUM PURIFICATUM—PURIFIED COTTON—SUGGESTED STANDARD.

The hairs of the seed of Gossypium (Fam. Malvaceæ) freed from adhering impurities and deprived of fatty matter.

White, soft, fine filaments, appearing under the microscope as hollow, flattened and twisted bands, spirally striate, and slightly thickened at the edges; inodorous and tasteless; insoluble in ordinary solvents, but soluble in an ammoniacal solution of cupric oxide.

When Purified Cotton, previously compressed in the hand, is thrown on the surface of cold water, it should readily absorb the latter and sink.

Purified Cotton should contain no more than a very small quantity, if any, of visible impurities, and on combustion of five grams or more should not leave more than 0.2 percent of ash.

Ten gms. of Purified Cotton are saturated with 100 cc. neutral distilled water, the water pressed out and divided into two portions, each of which is placed in a white porcelain dish. To one portion is added 3 drops phenolphthalein T. S., and to the other portion 1 drop methyl orange T. S. Neither portion should develop a pink color (absence of acid or alkali).

If 20 gms. be extracted in a narrow percolator with ether until 300 cc. percolate is secured, the percolate should, on evaporation to dryness in a tared beaker, leave a residue of not more than 0.5 percent of the weight of cotton used (limit of fatty matter). A blank test should be made with an equal quantity of the ether used.

If 20 gms. be extracted in a narrow percolator with alcohol until 200 cc. percolate is secured, the percolate should not be of a blue or green tint (absence of dyes), and on evaporation to dryness in a tared beaker the residue should amount to not more than 0.5 percent of the cotton used (limit of resins and soap). A blank test should be made with an equal quantity of the alcohol used.

If 20 gms. be extracted in a narrow percolator with hot distilled water (80 degrees to 90 degrees C.) until 200 cc. percolate is secured, the percolate should not be clouded (absence of soap), and on evaporation to dryness in a tared beaker the residue should amount to not more than 0.2 percent of the weight of cotton used (limit of soluble salts). A blank test should be made with an equal quantity of the water used.

SURGICAL GAUZE.

Gauze cloth, otherwise known as surgical gauze, has a large use not only in surgery but in the arts and even in the household.

In modern surgery a piece of sterile gauze is sometimes the only dressing employed. The process of its manufacture is well known and is given in some detail in the articles heretofore cited.

Gauze cloth in the cotton trade is known as "Cheese Cloth," "Tobacco Cloth" or unbleached gauze, and is quite distinct from surgical gauze, although large quantities of the former are used for surgical purposes. In this country gauze is spun and woven solely for surgical uses by one or more makers.

In the surgical gauze found in the market there is a variation in the length of the fibre, the size and weight of the thread from which the gauze is woven, also a variation in the yardage per pound and in other physical and chemical characteristics.

In some samples of gauze in the market there will be found certain dressings or loadings added to improve the appearance, to increase the weight, as well as to assist in holding the gauze out to its full width and length.

In the cotton trade woven fabrics of the character of gauze are standardized by taking a square inch and counting the number of threads. For example, a high grade gauze carrying forty longitudinal and forty-four cross threads per square inch, carries eighty-four inches of thread.

Fabrics of this character are made in something like twenty grades beginning with gauze carrying twenty threads by ten, or thirty threads per square inch.

Much of the surgical gauze in the market will be found not to be fully thirty-six inches in width. This is accounted for by the fact that these goods are woven in the gray thirty-six inches wide, and it is not practicable to bleach the goods, render them absorbent, and retain their full width. The usual variation is about one inch per yard; in other words, the average width will be found to be about thirty-five inches.

The following table shows the threads per inch, the average yardage per pound of the best known grades of surgical gauze:

SURGICAL GAUZE.

Threads per Inch.	Yards per Pound.
44 x 40	9.38
32 x 36	14.81
28 x 24	16.00
24 x 20	18.83
20 x 14	23.20

The Bureau of Municipal Research of New York City has made an attempt to secure uniformity in the supplies for the various departments of the City of New York. They have adopted a standard requirement for surgical gauze as follows:

The gauze shall count in the finished state not less than the total number of threads per square inch specified, shall not exceed the yardage per pound specified, and it shall be acceptable by the Bureau as first quality in every respect. Gauze delivered under these specifications shall be made from clean, white, long cotton fibre, fully bleached and absorbent, of soft finish, and upon extraction with acidulated water (2 percent Hydrochloric Acid) it shall show a loss of not more than 1 percent, and shall show no reaction for starch, soap, dextrin, glue or other filling.

The object of the foregoing test—extraction with acidulated water—is to prevent the addition of starch, soap, dextrin, or glue for making weight, increasing the apparent size of thread, etc.

The following test for Surgical Gauze was worked out in conjunction with the Medical Supply Department of the U. S. Army.

PLAIN ABSORBENT GAUZE.

The gauze must be free from loading material and visible particles other than cotton, and be colorless.

Two yards boiled in 500 cc. of distilled water for one-half hour, boiling distilled water being added at intervals, to replace that lost by evaporation, the water pressed out, rinsed with sufficient boiling distilled water to measure 505 cc. cooled to 25° C., and made up to 500 cc. with distilled water at 25° C., shall yield a turbidity not more than that produced by 0.030 gram of infusorial earth (passed through a 200-mesh sieve) well shaken in 500 cc. of distilled water in a colorless glass bottle, when examined by transmitted light.

Two yards boiled in 500 cc. neutral distilled water for one-half hour, boiling distilled water being added at intervals to replace that lost by evaporation, the water pressed out, cooled to 25° C., and divided into two equal parts; one part

shall be neutral to three drops of phenolphthalein test solution, the other to one drop of methyl orange test solution.

Two yards boiled in 500 cc. distilled water for one-half hour, boiling distilled water being added at intervals to keep the volume at the original quantity, the water pressed out and rinsing twice with 250 cc. portions of boiling distilled water, the water pressed out and the total volume evaporated to dryness in a platinum dish and kept at 100° C. until constant in weight, shall yield not more than 0.13% by weight of residue, of which not more than 0.045% shall be inorganic.

One yard extracted with 95 per cent ethyl alcohol in a Soxhlet extractor for five hours shall yield a solid extract, when dried at 100° C. of not more than 0.55% by weight.

One yard extracted with ethyl ether in a Soxhlet extractor for five hours shall yield a solid extract when dried at 100° C. of not more than 0.55% by weight.

One yard incinerated in a platinum crucible shall yield not more than 0.55% by weight of ash, containing potassium, sodium, magnesium, calcium, iron and aluminum, which were originally in combination with hydrochloric, sulphuric and phosphoric acids.

One yard folded into a square, the surface of which measures sixteen square inches, with the loose ends loosely joined by No. 30 white cotton thread, when held nearly in contact with the surface of distilled water and dropped thereon, at 25° C. temperature shall be completely submerged in five seconds.

LABORATORIES OF JOHNSON & JOHNSON, New Brunswick, N. J.

Papers Read Before the Sixty-Third Annual Convention

QUIZZES, TESTS AND EXAMINATIONS.*

H. V. ARNY.

From the early college days of the writer, he has heard arguments against final examinations as an essential part of the college course. He has heard that passing an examination is no criterion of the ability of the student; that a bright lad can "cram" up enough information during the few weeks prior to the examination to pass that ordeal with flying colors: while a conscientious student who knows infinitely more than the "cramner," may become "rattled" and do poorly under the same test. There have come to him statements that the examination questions are made up of a lot of disjointed facts, many of which are of no importance to the candidate in after-life; that far better would it be to watch the student day by day and graduate him on his record rather than on the marking of his answers to a batch of several hundred questions fired at him on a hot day in May or June.

These arguments appealed to the writer in his less mature years, but the more he has studied the question the more he sees how shallow is the logic of those who would abolish examinations.

In fact, the movement is a symptom of that dangerous fallacy prevailing in this, "the childrens' age," as it is fondly dubbed by its advocates. The precious little ones must be permitted to follow individual tendencies unhampered by adult meddling. In order that the child develop into a free agent, a thinker who thinks for himself, he must not be hedged in by rules that were pronounced essential by our grandparents and by the Holy Writ.

This pernicious doctrine pervades our entire educational system, grammar school, high school and college, so that now the mighty word "duty" seems eclipsed by the softer one "inclination" and the onlooker wonders where it will end. In these very days we have before us the illustration of the fruition of untrammeled individualistic childhood in a rich young man who has spent seven years and a big slice of a huge fortune in getting out of an asylum for the criminal insane. But to quit moralizing and to turn to our mutton, the final examination is the greatest incentive to work that is found in the college course and can be abandoned only if similar examinations are held throughout the year.

We will discuss later the relative value of tests and final examinations and at this place will consider the need of the written examination itself.

As to the claim that the passage of an examination is merely a feat in the art of "cramming," we will inquire whether those advocating the abolition of exami-

* Read before Section on Education and Legislation, A. Ph. A., San Francisco Meeting.

nations discountenance all memorizing on the part of the pupil? To cite what was said by the writer on another occasion:

"There are a tremendous number of facts that should be learned by students, despite statements to the contrary on the part of those of our teachers who promulgate the doctrine that learning should be a plethora of observation and a paucity of memory work, and I venture to go so far as to say that the reason some of the exponents of this idea are great, is because their minds are stored with information beyond their fellows—and that gotten as much under the midnight lamp as in the laboratory."

As to the criticism that examinations mean squeezing out of facts of little service in every-day pharmacy; facts that are forgotten so soon as the examination is over; the question depends largely on the character of the examination. To expect a man to know the solubility of quinine salicylate in water and in alcohol is absurd, but to expect him to know the solubility of potassium iodide in water and of iodine in alcohol is entirely proper; since the latter information should be at hand on almost every day of prescription experience.

To use a simile taken from drug store experience, there are in every pharmacy, hundreds of articles for which there is scarcely a call in a year. Of course, these things can be card-catalogued, but after all, is not the most valuable man in the store the one whose memory is "long" enough to find these things on the instant, without recourse to the catalogue? It is a dictum in business that the man who has the most facts on his finger tips is more useful than one who has to "look it up" almost every time a question is asked him.

Hence the tremendous value of preparing for a final examination after one has spent the college years in acquiring knowledge by absorption. But one phase of study is essential to the other. The man who leaves all of his studying for the final cram has a poor mental equipment after the examination is over; but the man who "bones" for the final examination, after rational study during the college term clinches the facts so that they cannot wholly get away from him in after life.

But final examinations are but one of several means that the teacher should employ in forcing his pupils to do their very best. In fact, were final examinations the only way of getting students to work, the writer would be tempted to join the anti-examination ranks and to urge that haphazard absorption was the best means of acquiring knowledge. Students must be prodded every week, if not every day, of the college course, else the best of them will lag in their studies. The two ways to stimulate them to further effort are quizzes and tests.

As to quizzes every man who has spent time in college knows what they mean. A group of twenty-five to fifty students in a room with an instructor at the desk. Mr. Jones is called upon to recite and the rest either sleep or fool around, while Jones fishes about in the recesses of his mind for the answer. If Smith, Jones' neighbor is bright, the answer is apt to come from Smith or his book via Jones' lips. If the teacher is keen, the digression is detected and the class is regaled for five minutes with a "dressing down" of Smith. If the teacher is dull, the game is not detected and Jones gets a "perfect" mark for Smith's answer.

The writer has studied the quiz system both as a student and as a teacher, and each year he becomes more and more convinced of the utter futility of the oral quiz, either as a means of instruction or as incentive to study.

Each year he endeavors to put more and more of his quiz work upon the basis of written tests, for in these he finds the fairest, the most practical method of making students work. Of course, in large institutions the marking of several hundred test papers each week means a vast amount of work on the part of the instructor upon whom the task falls. It might be added that the chief object of this paper is to suggest to those in charge of the administration of college work, to see that the marking of answers to tests be made the daily—not nightly—routine work of the instructors.

One cannot blame an instructor who is given enough duties to keep him busy all day, if he is not enthusiastic about spending his evenings marking test papers. Nor is it surprising that following the line of least resistance, the oral quizzes go on to the amusement, if not to instruction, of the students they are supposed to benefit.

The writer thinks that in a pharmacy college the quiz hours should be devoted largely to written tests. He feels that each student should get a pharmacy test one week, a chemistry test the following week, a materia medica or botany test the third week, getting back to the pharmacy test the fourth week. In each department the quiz hour should be allotted something in this style: the holding of a test one week, the explanation of the test the next week; possibly an oral quiz the third week; while on the fourth week, a written test is again in order.

Should such a schedule obtain, the student must study during every week of his course and he can see week by week his chances of promotion; and if a man getting fifty to sixty percent in his tests cannot see that he is doomed to failure at the final examination unless he is willing to knuckle down to hard work, he has no one but himself to blame when success is not his.

If the plan of making tests an official part of the instruction prevails; if they are declared as essential to the well-being of the student as are the lectures and the laboratory courses; if they are given regular places upon the schedule and if the marking of the answers is considered as a part of the daily routine of the instructor in charge, the need for final examinations will become less and less until the importance of that now essential part of college instruction will finally reach the vanishing point and those advocating the abolition of the final examination will have their way.

PROVIDING NEEDED EDUCATION.*

ROBERT P. FISCHELIS, B. SC., PHAR D.

Providing education or rather post-graduate education is one of the professed functions of the American Pharmaceutical Association and in order to properly carry out such education, the Association has adopted the "extension" idea through its monthly journal and the Yearbook, both of which reach every member of the Association.

Without a doubt the needs of the members, as far as keeping in touch with pharmaceutical progress is concerned, are thus well taken care of; but there is

* Read before Section on Education and Legislation, San Francisco Meeting.

a huge possibility for doing educational work which the Association is overlooking and which, if properly looked after, would, in the opinion of the author of this paper, bring considerable credit to the Association as a whole and indirectly to every member.

Pharmacy and pharmacists have too long been the subjects of many misconceptions on the part of the lay public and it is time that the public should be educated to respect the pharmacist and his profession even as it has been taught to respect the physician and the practice of medicine.

No one will dispute that most of the "stories" implicating the entire drug trade in the dope traffic and other nefarious business originate in the public press, and when such "stories" appear, they are scarcely if ever replied to with the true facts by the members of the profession which is thus unjustly attacked.

The remedy for this condition is not as difficult as it may at first appear, although it may at times prove to be a slow process. It simply requires a further extension of our system of education such as the Journal of the American Medical Association has been carrying on with increasing success for several years.

The plan followed by the Association mentioned is briefly this: Selecting from each issue of the Journal a number of articles which have a news value to the general public, printing them on sheets of paper which can be conveniently folded and wrapped and mailing these so-called "Press Bulletins" to newspapers. If the articles selected for the "Press Bulletin" are short, as they originally appear in the Journal, they are printed in full and if too long they are abstracted. The phrase, "says the Journal of the American Medical Association," is inserted at some convenient place and the article as sent out is in such shape as to require very little if any editing by the newspaper men.

In the report on public education submitted at the 1915 convention of the American Medical Association, the following reference is made to the "Press Bulletin":

"The newspapers of the country are showing an increasing tendency to utilize this material and to credit the Association and the medical profession with sincerity and disinterestedness in its educational efforts. In January, the secretary, at the direction of the general manager, sent to each of the 4,912 names on the mailing list of the Bulletin a return postal card asking them to indicate whether they desired the Bulletin sent to them for the coming year; 2,302 replies were received, of which 102 asked to have the Bulletin stoppd and2,200 asked to have it continued. As this is the first time that any expression of opinion has been asked for, this evidence of a desire on the part of 45 percent of the newspapers on the list to have the Bulletin continued is ample evidence of its value."

What the Journal of the American Medical Association can do along these lines, can also be done by the Journal of the American Pharmaceutical Association.

The more real pharmaceutical news and information we furnish the newspaper men, the less sensational rot about pharmacy will they have space for. Modern successful newspapers want to publish correct information, and the chief reason why they are unable to do so in many instances is because some inexperienced reporter is assigned to a technical field which he cannot handle intelligently. "Press Bulletins" will in a large measure overcome this difficulty.

Of course, a judicious censorship would have to be exercised by our editor in preparing these bulletins.

Many of the editorials appearing in the Journal of the American Pharmaceutical Association, are well worth the layman's consideration and would go far toward setting pharmacy right with the public on a good many questions affecting both, but we cannot expect the busy editor of a daily paper to read our journal and thus get our point of view.

As for the papers, the argument will probably be advanced that they are too long for bulletin purposes, and that it would take too much of our editor's time to abstract them.

If the by-laws of this Association were lived up to in regard to the presentation of papers, an abstract would be prepared and handed in before the meeting, for Chapter X, Article III, of the by-laws, specifically states:

"Any person desiring to submit a paper to the Association[1] shall present to the Chairman of the particular section to which it refers, at least ten days prior to the meeting, an abstract of said paper, indicative of its contents, and consisting of not less than fifty or more than two hundred words. This abstract shall be printed as a part of the program."

An abstract of from fifty to two hundred words would be just about what would be required for the "Press Bulletin."

The custom of most scientific associations is to print abstracts of all or nearly all papers presented at their annual meetings in the issue of the Journal which immediately precedes the date of the meeting. This gives other members an opportunity to prepare for the discussion upon any paper that is to be presented.

It was doubtless intended by the framers of our by-laws that a similar arrangement should be followed by this Association and the abstracts prepared in accordance with the rules would thus answer the two-fold purpose of providing better discussions at the meetings and material for the "Press Bulletins."

COÖPERATION A NECESSITY.*

Why Should There Not Be Activity Between the Medical and Pharmaceutical Professions in this Direction?

JOSEPH P. REMINGTON, PH. M.

Coöperation, as we all know, is the act of working together to one end, and it would seem that the purpose of saving life, ameliorating suffering and promoting restoration to health are the principal objects of the medical and pharmaceutical professions. Coöperation has not always been the rule in the past, and there have been instances of open hostility between the professions recorded in history. The causes are not hard to determine.

Pharmacy was originally a part of medicine, but this was centuries ago and the word "apothecary" is frequently found in the Bible. When the medical pro-

[1] Recommendation adopted.

* Read at Joint Session of the Section on Education and Legislation, Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy.

fession became divided and various cults or so-called "schools" of medicine came into vogue, solidarity was out of the question. The enormous growth of quack remedies had a most injurious effect in widening the differences between the doctor and the druggist. Sales agents of manufacturing pharmaceutical houses who introduce new medicines directly to the physician, and the dispensing of medicines directly to the patient by the doctor have provoked retaliation on the part of the druggist, and the cry is heard all over the land that doctors no longer write prescriptions. This, of course, is not literally true, but only partially so. This has had an unfortunate outcome and cases are easily cited where pharmacists have trenched upon the domain of the physician and have given advice to patients entering their stores, oftentimes with serious effects, for the pharmacist is not by training or education fitted to give medical advice or diagnose a case. We now see modern pharmacists in our large cities and towns and elsewhere supplying goods of a general character which cannot be classed under medicines or which especially aid in the cure of disease. These facts are well known. The patient who is sure to look out for the saving of expense frequently reads the advertisement of ready-made medicines, and, assisted often by the druggist, is induced to try the "cure-all." Proprietary medicines are not all inefficient. At the present time they are more unpopular than they ever have been, largely because the newspapers and public prints are educating the public to the iniquities of the advertising of these proprietaries. Physicians who write prescriptions largely in their practice do not as a rule like to enter a drug store which displays advertising cards, almanacs, dodgers, etc., recommending all kinds of medicines which claim to cure all kinds of diseased conditions.

A prominent physician of Philadelphia some years ago was treating a patient for rheumatism. The patient was well-to-do and perfectly able to engage the services of a physician. The doctor wrote a prescription, handed it to her, and directed her to an ethical pharmacist to have it filled. The woman had been buying coal oil, liquid glue, castor oil, paints, window glass, putty, etc., at low rates from a druggist who was rated as a wholesaler dealer in drugs. He did not hesitate, however, to put up prescriptions or sell anything. Upon the marble counter immediately in front of where she stood there was a pile of what are known as dodgers,—single sheets of paper of the cheapest character exploiting a remedy for rheumatism. The clerk in the store wrapped up the prescription bottle, containing a liniment, in one of these paper dodgers. It happened to be an advertisement of an oil largely used, with the front name of a saint. Arriving home, the patient used the doctor's liniment for several days with no immediate improvement. She had saved the dodger and, turning to it, she found that the quack medicine promised immediate relief. She went back to her druggist friend, procured a bottle, and the druggist chuckled at the success of his "silent salesman." There was a terrible time when the woman visited the doctor and refused to pay his bill, saying that if he could not make a better oil than the stuff that she could get which was so largely advertised, she would not only not pay her bill, but never go near him again. These facts were related to me personally by Dr. Atlee, who complained bitterly of the druggist and at the next County Medical Society meeting he proceeded to air his grievances before that body. Nothing ever came of it, however, as the druggist had not committed a legal

mistake, and it was not worth making a test case. Naturally, coöperation did not exist under such circumstances. Neither the doctor nor the druggist is living at present, but the druggist's business dwindled away, while the doctor's practice increased and he afterwards spoke of the incident as a joke on himself.

There are drug stores here and there which contain no patent medicine advertisements; there are many others which keep patent medicines, but they are out of sight and never displayed, simply because the proprietor regards it as bad business policy to encourage the sale of such proprietaries. The general ground which is taken by the druggists who sell proprietaries is that they are in the drug business. They believe that the public should get medicines from medicine stores. The druggist is compelled to give a State Examining Board proof of his fitness to dispense medicines. He spends considerable money and time in getting a diploma from a college of pharmacy. If the public cannot get medicines that they want from him, they will go elsewhere—possibly to a department store. As the prescription business has fallen away, the druggist adds to his stock many articles void of medicinal action, as kodaks, fishing tackle, fountain pens, etc. On general principle the public does not object; but the doctor cannot very well find a legitimate way of increasing his revenue. He is supposed to stay in his office and wait for patients when he is not out visiting the sick. He says, "The druggist is selling all kinds of medicines to his patients and counter-prescribing. Now why cannot I lay in a stock of tablets and other medicines and sell or give them to my patients?" Many times he can, and he works off the samples left by the agents of manufacturers, and, if he is criticised for this, he states that he cannot trust the druggist to fill his prescriptions accurately.

On the other hand, the druggist charges the physician with often giving his patient something that he has in stock and which is only pretty near what he ought to give, and he makes the disease fit the medicine. This represents the problems which exist at the present time and which have existed for many years.

Again, many pharmacists have tried from time to time to conduct a pharmacy strictly along the lines of catering to physicians only to find that support from the medical profession is very luke-warm, with the result that money is lost continually.

It would seem that the time is ripe for active coöperation between the two professions. The well educated pharmacist can prepare special medicines with combinations of ingredients which the doctor with the assistance of the pharmacist knows will suit a particular case which the doctor is treating. The patient has the right to expect, if he pays the doctor's fee, to get something to relieve his suffering which embodies all the knowledge and experience possessed by the doctor. Nothing disgusts a patient more than to find that the doctor has prescribed one of the largely advertised patent medicines which the patient knew all about before he went to the doctor's office. He pays three or four dollars for professional advice, but advice has already been given him in print on the advertisement or label of the patent medicine, and which he has read frequently in street cars or on the sides of barns. He thinks finally that the statements are highly colored, and hence he goes to a physician for a real, unbiased opinion and a prescription fitted exactly for his case.

If a propaganda could be started in favor of more prescription writing one of

the best arguments that I have used is that a doctor changes his medicine frequently, because of the stages which are well marked in a patient's condition. In treating the various fevers which are so common, the medicine which is at first used must be adapted to the patient's condition, and if the patient does not improve, he must modify or change the prescription entirely. Again, when the patient is convalescent, it would be highly improper to continue the medicine which was given at the on-set of the attack. The formula for a patent medicine never changes and the patient is not likely to get well if he takes the proprietary continuously during the progress of the disease. One never sees a cautionary notice on a patent medicine that if after trying a few doses it does not cure, one should call in a physician. The label rarely or never admits that it can fail and yet a life may be sacrificed if a good physician is not engaged and the medicine is not changed from time to time. A life is worth more than dollars.

It seemes at the present time that physicians and pharmacists should join hands and assist each other. Many physicians are using the preparations of the United States Pharmacopœia and National Formulary and are getting excellent results. The National Association of Retail Druggists have been engaged for years in bringing about better relations between the professions by visiting physicians and endeavoring to influence them to use official preparations. It is undoubtedly true that if physicians would prescribe in general practice such official preparations as they can, leaving the prescribing of proprietaries and synthetics to special cases, much good would be accomplished.

If our medical collegs and universities would invite lecturers on pharmaceutical subjects to give to our medical students courses in modern pharmacy, the student would be at least helped in his medical practice, after he graduated, to understand and know the properties and doses of medicines that should be procurable at any drug store.

This is one way of promoting coöperation with the practice of medicine assailed on all sides by what are known as irregular practitioners. There could be a revival which would result in much good.

It might be possible for the American Pharmaceutical Association to appoint a commission consisting of physicians and pharmacists who would issue a well-worded circular asking coöperation on both sides.

Contributed and Selected

FORMALDEHYZED CAPSULES.*

WILBUR L. SCOVILLE.

It is a matter of common knowledge that formaldehyde hardens gelatin solution, and in the course of a short time renders it insoluble in water. Within a few years there have appeared articles in pharmaceutical journals stating that gelatin capsules treated with formaldehyde were suitable for use as enteric capsules, i. e., as capsules which would pass through the stomach unchanged but would dissolve in the intestines. In most instances, the writers have given no specific formula for treating the capsules, nor have they stated the strength of formaldehyde which should be used or the length of time that the capsules should be treated.

One writer, however, directed that the capsules should be immersed in a ten percent solution of formaldehyde for five minutes.

The value of this treatment will be pointed out later.

Gelatin capsules and pearls containing medicaments, which have been treated with formaldehyde, have appeared on the market, and claim to be enteric. Whether there is very much demand for these the writer does not know, but they attracted the attention of medical men, and have received some endorsement.

It has seemed worth while, therefore, to test the method and to find the conditions most suitable for producing desirable results in treating gelatin capsules; so a little more than three years ago a series of experiments were made for this purpose.

It was quickly found that strong solutions of formaldehyde were not suitable because they produced a capsule which would not dissolve in a weakly-alkaline solution within 24 hours.

The treated capsules were tested by immersing them in 0.3 percent hydrochloric acid containing a little pepsin, and kept at a temperature of 37° to 38° C. The aim was to produce a capsule which would remain unbroken in this acid solution for at least three hours, but which would dissolve or disintegrate in a 0.5 percent solution of monohydrated sodium carbonate within three to five hours, at a temperature of 37° to 38° C.

Since the experiments were made mostly on filled capsules of the elastic or soft variety, the treatment consisted in immersing the capsules in formaldehyde solution of definite strength for a definite period of time, then draining and drying them without washing.

Ten percent solutions of formaldehyde were employed for the first experi-

*Read before the Detroit Branch of the A. Ph. A., September 17, 1915.

ments, and immersion was made for periods varying from 30 minutes to one minute.

All capsules so treated proved to be insoluble in either the artificial gastric or intestinal juice, and were unsuited for enteric purposes. Weaker solutions gave better results, and after preliminary tests covering several weeks of time, an aqueous solution containing one percent of (absolute) formaldehyde was found to be the most suitable strength for the purpose. A further series of tests showed that the time that the capsules remain in such a solution is an important factor. It was soon learned that if the capsules were allowed to remain in the solution more than six minutes, they would not dissolve, nor soften sufficiently to break, in the alkaline solution in three hours.

It was next learned that the action of the formaldehyde on the gelatin is slow and that it continues after the capsules have dried. Thus-treated capsules which tested satisfactorily the day after they were made, were found to be very unsatisfactory a week later. That is they dissolved in the first test in the alkaline solution within two or three hours, but remained intact in it for three to five hours in the second test.

Experiments were therefore made in which the capsules were immersed for 5, 4½, 4, 3½, 3, 2½, 2, 1½ and 1 minutes respectively.

On testing the next day it was found that all of these dissolved in the acid solution within one hour, and were therefore not enteric; but a month later the same capsules all resisted the acid solution for three or more hours, and those which had been treated more than 3½ minutes resisted the alkaline solution for 3 hours, while those treated 3 minutes or less broke or dissolved in the alkaline solution within three hours.

Two months later the tests were again repeated, and none of them were soluble in the alkaline solution in three hours, though a few broke.

These experiments showed that for the above treatments the action of the capsules could be relied upon for short periods of time, but they were useless for enteric purposes until a few days after treatment, and also after about two months' time.

Alcoholic solutions of formaldehyde were then tried, but did not prove satisfactory, the capsules breaking up and dissolving in the acid solution almost as quickly as the untreated capsules, even after five minutes' treatment in a 5 percent formaldehyde solution.

Another series of experiments was then made with 1 percent aqueous formaldehyde solution, the capsules being macerated for 60 seconds, 45 seconds, 30 seconds and 15 seconds respectively. Tested three days after treatment, all of these dissolved in the acid solution. After standing two weeks those which had been treated 15 and 30 seconds partly broke in acid solution within three hours, while the others resisted for three hours. All dissolved in the alkaline solution within one-half to two hours. Monthly tests on these during the first five months showed them all to be satisfactory for enteric use after the first month.

At the end of a year, those treated for 15, 30 and 45 seconds were still satisfactory, resisting the acid solution for three hours but dissolving in the alkaline

solution within three hours; the others were not soluble in the alkaline solution in three and one-half hours.

This seemed to prove that treatment of the capsules for 30 seconds by a one percent formaldehyde solution, at ordinary temperature, produces a satisfactory enteric capsule. But two years later, or three years after the capsules were so treated, they were found to be entirely insoluble in either the acid or alkaline liquids after nineteen hours. In the alkaline solution the capsules swelled and softened, but none broke. Those treated for 15 seconds acted similarly.

The inevitable conclusion is that the treatment of gelatin capsules with formaldehyde solution for enteric purposes has only a limited value.

For general prescription practice its value is limited by the fact that the capsules either do not become enteric for several days after treatment, or else become insoluble and unfit for use after three or four days.

If it be practical to prepare the capsules two weeks in advance of their use, then all that is needed is to immerse them in a one percent aqueous formaldehyde solution for 30 seconds, drain them quickly and dry them, then store for two weeks before using. Capsules so treated should not be employed after about a year, because they become wholly insoluble.

Within these limits the capsules have proved satisfactory both by tests in vitro and by chemical use. But it should not be forgotten that on long standing the capsules become wholly unfit for use.

LABORATORY, PARKE DAVIS & CO.

THE EXTEMPORANEOUS PREPARATION OF CAMPHOR LINIMENT.

ROBERT WOOD TERRY.

Having noticed the article entitled, "A Medley," by George M. Beringer, Jr., in the August issue of the Journal, I would like to call your attention to a very simple and rapid method of preparing camphor liniment.

Mr. Beringer recommends the purchase of an almond grater to reduce the camphor to fine granules to which the oil is added and the mixture placed on a water-bath, when after fifteen minutes the camphor will be in solution, this being more rapid than by the official method in which coarser particles of camphor are used, the assumption being, presumably, that the more surface of the camphor exposed to the solvent action of the oil, the more rapid the solution; therefore, why not carry out this theory to its limit of practical application?

The following method I have used for three years and have prepared camphor liniment in less than ten minutes by this method: Place the camphor in a mortar and add sufficient chloroform or ether to reduce the camphor to an extremely fine powder, being sure no small lumps remain, and allow this to stand a minute with an ocasional stir to facilitate the spontaneous evaporation of the solvent; then, add a small quantity of the oil and triturate until a thoroughly homogeneous mass

results; add another small portion of oil and mix again; transfer this to the bottle and rinse the mortar with the remainder of the oil; shake, and after standing three or four minutes the camphor will be in solution—provided, the camphor was powdered properly. Alcohol must not be used in powdering the camphor as this evaporates slowly as compared to the ether or chloroform, and, being almost insoluble in cotton-seed oil, it produces an undesirable cloudiness in the finished product.

Always weigh the oil unless its exact specific gravity is known. This will insure the finished product being the required strength.

The trace of chloroform or ether remaining will be of no importance and I can see no objection to this feature.

Another advantage of this process is that no camphor is volatilized resulting from the heating on a water-bath—a factor which might account for a weak preparation.

This method is not as good as the official method when camphor liniment is intended to be used for a subcutaneous injection, wherein the heating would tend to sterilize the oil, a desirable feature. So little camphor liniment is used for this purpose, and especially since ampuls of this preparation are on the market, that it would not be practical to prepare it by the official process just for this reason.

Before writing this article, I tried to find some mention of this method in print. The only mention found was that in Parrish's Treatise on Pharmacy, by Wiegand, 1884, page 808, which I will quote: "It is made very readily by reducing the camphor to powder with a small quantity of ether, and when thus divided a little more ether is added, which forms to a pasty consistence, when it will mix with great readiness with the oil. A slight exposure to the air in a shallow vessel removes every trace of ether."

Proceedings of the Council

Second Session, 1914-1915*

The second session of the Council of the American Pharmaceutical Association for 1914-15 was held at the Hotel Bellevue, San Francisco, Cal., on Monday, August 9, 1915, at 9:30 a. m., Chairman E. G. Eberle in the chair.

Present: Messrs. Alpers, C. E. Caspari, Claus, Dawson, Day, Eberle, Engelhardt, England, Freericks, Godding, Hynson, Koch, Mayo, Osseward, Snow, Thiesing, Whelpley and Wulling.

On motion of J. G. Godding, seconded by J. H. Dawson, the reading of the minutes of the first session of the Council for 1914-15, and the Council Letters issued since this date, was dispensed with.

Applications for membership, from Nos. 257 to 283, inclusive, were presented as follows, and the applicants elected:

No. 257. Philippe J. Begin, 103 Water St., Augusta, Maine, rec. by M. L. Porter and A. W. Meserve.

No. 258. Roy Edward Mann, 84 S. Main St., Brewer, Maine, rec. by A. W. Meserve and M. L. Porter.

No. 259. George W. Rankin, 107 Congress St., Portland, Maine, rec. by A. W. Meserve and M. L. Porter.

No. 260. Harley Roscoe Alden, 4 Lisbon St., Lewiston, Maine, rec. by M. L. Porter and A. W. Meserve.

No. 261. John Milton Groff, Cynwyd, Pa., rec. by J. W. Sturmer and F. E. Stewart.

No. 262. Joseph R. Sutter, 307 N. 3d St., Burlington, Iowa, rec. by George H. Schafer and J. H. Axt.

No. 263. Samuel Honigberg, 831 Chambers St., St. Louis, Mo., rec. by H. M. Whelpley and J. W. Mackelden.

No. 264. Charles M. Twining, The Cutler Laboratory, Berkeley, Cal., rec. by Fred I. Lackenbach and J. W. England.

No. 265. John W. Donaldson, 840 W. 27th St., Indianapolis, Ind., rec. by F. W. Meissner and Frank H. Carter.

No. 266. John Harper, 311 Main St., Great Barrington, Mass., rec. by John G. Godding and Theodore J. Bradley.

No. 267. George Milton McEckron, Monnett, Mo., rec. by Minnie M. Whitney and D. V. Whitney.

No. 268. Laird J. Stabler, 1122 W. 30th St., Los Angeles, Cal., rec. by Clyde M. Snow and Wm. B. Day.

No. 269. Wortley Fuller Rudd, 120 Corvardin Ave., Richmond, Va., rec. by Wm. B. Day and A. Bolenbaugh.

No. 270. Teodoredo M. Gutierrez Gonzales, Libertad No. 75, Holguin, Cuba, rec. by Jose P. Alacan and J. G. Diaz.

No. 271. Alfred Richard Trimbach, 158 Horton St., Lewiston, Maine, rec. by Theodore J. Bradley and John G. Godding.

No. 272. Malcolm Earl Wilson, Sardis, Miss., rec. by H. M. Faser and Wm. B. Day.

No. 273. Hugo O. Peterson, 1921 Elliott Ave., S., Minneapolis, Minn., rec. by E. L. Newcomb and F. J. Wulling.

No. 274. Virgil T. McCroskey, 206 Main St., Colfax, Wash., rec. by C. W. Johnson and Edith Hindman.

No. 275. Fred D. Marr, 1124 Pacific Ave., Tacoma, Wash., rec. by C. W. Johnson and C. Osseward.

No. 276. Edwin T. Bodin, Bay City, Mich., rec. by H. C. Christensen and Wm. B. Day.

No. 277. William Thomas Whitlock, 423 Riverside Ave., Spokane, Wash., rec. by C. Osseward and H. E. Holmes.

No. 278. Reuben J. Botkin, 138 West 31st St., Bayonne, N. J., rec. by Otto Raubenheimer and Luke C. Hines.

No. 279. Morris Tobias, 56 Ave. B., New York, N. Y., rec. by Otto Raubenheimer and Luke C. Hines.

* The first session of the Council for 1914-15 was held at Detroit, Mich., on August 29, 1914.

No. 280. Robert J. Frick, 634 W. Main St., Louisville, Ky., rec. by Linwood A. Brown and C. S. Porter.

No. 281. Charles Philip Valentine, 1511 Railroad St., Helena, Montana, rec. by Charles E. Mollet and Alexander F. Peterson.

No. 282. August E. Staffa, 116 Rogers Ave., San Antonio, Texas, rec. by Jacob Schrodt and W. Cousins.

No. 283. Pinkney McGill White, 833 N. Fremont Ave., Baltimore, Md., rec. by James A. Black and O. W. Muehlhause.

The report of the Secretary of the Council was presented as follows:

Members of the Council:

GENTLEMEN—The Council held one session at the Detroit (1914) meeting and has transacted business by mail since.

Twenty-eight Council Letters have been issued, covering 83 pages, and 45 motions.

The members elected number to date 283; the number last year by the first session of the Council on August 24, 1914, was 394.

A synopsis of the motions of the Council is attached and will become a part of the records. The minutes up to June 21, 1915, (Council Letter No. 27), have been published in the Journal.

The membership of the Council numbers 41, of which 17 are representatives of Local Branches.

The three members of the Council elected by mail on November last, for 1915-16, were: Caswell A. Mayo, New York, N. Y.; F. M. Apple, Philadelphia, and Harry V. Arny, New York.

Respectfully submitted,

J. W. ENGLAND, Secretary of the Council.

SYNOPSIS OF MOTIONS OF THE COUNCIL 1914-15.

Motion No. 1—Election of Council Committees for 1914-15. Carried.

Motion No. 2—Election of Members Nos. 1-2 inclusive. Carried.

Motion No. 3—Authorization of Committee on Publication to Effect a Reorganization and to Systematize the Work. Carried.

Motion No. 4—Election of Members Nos. 3-17, inclusive. Carried.

Motion No. 5—Petition to form Detroit Branch, A. Ph. A. Carried.

Motion No. 6—Election of Members Nos. 18-23 inclusive. Carried.

Motion No. 7—Petition to form Morgantown, W. Va., Branch, A. Ph. A. Carried.

Motion No. 8—Appropriation of $1000 for Journal and $400 for Printing, Postage and Stationery. Carried.

Motion No. 9—Election of Members Nos. 24-30, inclusive. Carried.

Motion No. 10—Election of Members Nos. 31-36, inclusive. Carried.

Motion No. 11—Time of Holding Sixty-third Annual Meeting of the American Pharmaceutical Association, i. e., week of August 9 to 14, inclusive. Carried.

Motion No. 12—Invitation to Canadian Pharmaceutical Association to meet in San Francisco in 1915 at about the same time as that fixed for the meeting of the American Pharmaceutical Association. Carried.

Motion No. 13—Change of title of Morgantown, W. Va., Branch, A. Ph. A., to West Virginia Branch, A. Ph. A. Carried

Motion No. 14—Appropriation of $230.68 for stenographic services for the Detroit meeting. Carried.

Motion No. 15—Election of Thomas F. Main as member of the Commission on Proprietary Medicines for term expiring 1919.

Motion No. 16—Appointment of Dr. James H. Beal as Chairman of Commission on Proprietary Medicines.

Motion No. 17—Extension of Invitation to Pharmaceutical Society of Japan to meet in San Francisco in 1915 at the same time as the A. Ph. A.

Motion No. 18—Election of Members Nos. 31-51, inclusive. Carried.

Motion No. 19—The Committee on Finance submitted the following for approval:

Proposed Budget of Appropriations for 1915.

Appropriation			
No. 1.	Salaries		$5,500
No. 2.	Journal		6,600
	(a) Publication	$5,000	
	(b) Clerical expenses	900	
	(c) Postage and stationery	450	
	(d) Freight, drayage and miscellaneous	250	

No. 3.	Printing, postage and stationery	900
No. 4.	Clerical expenses Secretary's office	416
No. 5.	National Formulary	1,000
No. 6.	Miscellaneous expense	100
No. 7.	Drayage, freight and expressage	100
No. 8.	Stenographers	350
No. 9.	Traveling expenses	600
No. 10.	Committee on Membership	250
No. 11.	Committee on Unofficial Standards	100
No. 12.	Year Book	2,500
No. 13.	Badges and bars	50
No. 14.	Certificates	50
No. 15.	Premium on Treasurer's bond	50
No. 16.	National Drug Trade Conference	200
No. 17.	Journals for Reporters	35
No. 18.	Section on Scientific Papers	25
No. 19.	Section on Education and Legislation	25
No. 20.	Section on Commercial Interests	25
No. 21.	Section on Practical Pharmacy and Dispensing	25
No. 22.	Section on Historical Pharmacy	50
No. 23.	Committee on Pharmacopœias and Formularies	25
No. 24.	Women's Section	50
No. 25.	National Syllabus Committee	25
		$19,051

At the Detroit (1914) meeting of the Association, the Section on Pharmacopœias and Formularies was abolished, but there was created, as a subdivision of the Section on Practical Pharmacy and Dispensing, a Committee on Pharmacopœias and Formularies.

Motion No. 20—Extending Invitation to Pharmaceutical Society of Japan to meet in San Francisco in 1915. Tabled.

Motion No. 21—Election of Members Nos. 52-58, inclusive. Carried.

Motion No. 22—Greetings to Pharmacists and Pharmaceutical Associations of other Nations.

Motion No. 23—Approval of General Rules of Publication of Council Letter No. 11. Carried.

Motion No. 24—Election of Albert Schneider, of San Francisco, as Local Secretary for 1915. Carried.

Motion No. 25—Disapproval of Proposed Exhibit at the Panama-Pacific Exposition.

Motion No. 26—Reply to Pearson's Magazine. Carried.

Motion No. 27—Election of Members Nos. 59-75, inclusive. Carried.

Motion No. 28—That action by the Council concerning the action of the Publication Committee in the matter of Editorship, be deferred until the next regular meeting of the Association, and that Mr. Marshall, the present Acting Editor, be given a hearing before the Council at that time. Not carried.

Motion No. 29—Election of Members Nos. 78-87, inclusive. Carried.

Motion No. 30—That E. C. Marshall be elected Editor of the Journal of the American Pharmaceutical Association. Not carried.

Motion No. 31—That the action of the Committee on Publication in the selection of Eugene G. Eberle as Editor and Advertising Manager of the Journal of the American Pharmaceutical Association, as reported in Council Letter No. 13, be ratified by the Council. Carried.

Motion No. 32—Appropriation of $100 from Centennial Fund to Prof. Edw. Kremers for research work on medicinal plants and cultivated and wild plants. Carried.

Motion No. 33—Election of Members Nos. 88-101, inclusive. Carried.

Motion No. 34—Approval of Action of Committee on Publication in awarding the contract for printing the 1913 Year Book (Volume 2) to the Eschenbach Printing Company, of Easton, Pa. Carried.

Motion No. 35—That Mr. Marshall be paid for one week's service in April and be given three weeks' vacation with pay from April 7th at the same rate of salary he has been receiving as Acting Editor.

Motion No. 36—Election of Members Nos. 101-113, inclusive. Carried.

Motion No. 37—Award of Contract for Reporting 1915 Annual Meeting, A. Ph. A., at San Francisco to Lehnhardt & Co., of Chicago, Ill., as per estimate submitted.

Motion No. 38—Election of Members Nos. 114-131, inclusive. Carried.

Motion No. 39—Appropriation of $50 for A. Ph. A. Buttons and Pins. Carried

Motion No. 40—Election of Members Nos. 132-174, inclusive. Carried.

Motion No. 41—Resignation of Local Secretary Albert Schneider.

Motion No. 42—Election of John H. Dawson as Local Secretary, to succeed Local Secretary Albert Schneider, resigned.

Motion No. 43—Approval of Program for 1915 Annual Meeting. Carried.

Motion No. 44—Election of Members Nos. 175-215, inclusive. Carried.

Motion No. 45—Election of Members Nos. 216-256, inclusive. Carried.

The report of the Committee on Revision of Constitution and By-Laws was presented, as follows:

Members of the Council:

GENTLEMEN—Your Committee on Revision of Constitution and By-Laws would make the following recommendations:

1. Amend Chapter I, Article II, of By-Laws, last line, changing "one month" to "three months." The amended article will then read:

Article II. The Nominating Committee shall submit the names of three persons as candidates for each of the offices of President, First Vice-President, Second Vice-President, Third Vice-President and three members of the Council. These names are to be submitted by the General Secretary by mail to every member of the Association, together with a request that the member indicate his preference on a ballot enclosed for that purpose, and return the same within three months after the adjournment of the annual meeting.

2. Amend Chapter II, Article VII, adding after the word "Association" "within thirty days after his installation."

The amended article will then read:

Article VII. He shall appoint all committees, not provided for in the By-Laws or otherwise directed by the Association, within thirty days after his installation.

3. Amend Chapter VIII, Article V, of the By-Laws, first line, changing the word "five" to "three" and inserting the words "and state" after the word "local."

The amended article will then read:

Article V. All local and state organizations of Pharmacists shall be entitled to three delegates as their representatives in the annual meeting, who, if present, become members of the Association on signing the Constitution and paying the annual contribution for the current year. Provided, that the provisions of this article shall not be so construed as to reinstate any member whose name shall have been dropped from the rolls for non-payment of dues, nor shall anyone who has been expelled from the Association be received as a delegate. All credentials shall be sent to the General Secretary at least two weeks in advance of the annual meeting.

The subject of the membership of the House of Delegates will doubtless receive especial consideration at this meeting, and it will probably be well to await the decision of the Association on this subject, and then modify the amendment to suit the action taken, so that there shall be no conflict.

4. Amend Chapter XII, Article I, of the By-Laws, changing the words "twenty-five members" to "fifteen members."

The amended article will then read:

Article I. Local Branches of this Association may be formed whenever it may appear that fifteen members of this Association, in good standing, will participate, provided that no more than one such branch shall be formed in any one state, province, district or territory unless such branches shall be formed at a point distant one hundred miles or more from any branch already established in the same state, province, district or territory.

5. Amend Chapter III, Article II, fourth line, striking out the words "editing, publishing and distributing" and inserting in lieu thereof, the words "the distribution of."

The amended article will then read:

Article II. He shall keep fair and correct minutes of the proceedings of the general session, and carefully preserve, on file, all reports, essays and papers of every description presented to the Association, and shall be charged with the necessary foreign and scientific correspondence and with the distribution of the Report on the Progress of Pharmacy, under the direction of the Council.

The By-Laws of the Association provide that the Reporter on the Progress of Pharmacy shall edit the Report on the Progress of Pharmacy, and that the editing, publication and distribution of the latter shall be under rules and regulations approved by the Council. (Chapter VI.)

The By-Laws of the Council provide that (Chapter IV, Article II): "The Committee on Publication shall have charge of the editing, publication and distribution of the Report on the Progress of Pharmacy and the Journal of the Association, and such other publications as may be issued, under the rules and regulations to be approved by the Council."

By the amendment above proposed, the division of authority in the publication of the Report on the Progress of Pharmacy will be clarified, i. e., the Reporter on the Progress of Pharmacy will *edit,* the Committee on Publicatoin will *publish,* and the General Secretary will *distribute.*

GENERAL RULES.

6. Rule 3. Proceedings of N. A. B. P. and A. C. P. F. in A. Ph. A. Proceedings, first line: Change the word "Proceedings" to "Journal of the American Pharmaceutical Association."

The rule will then read:

Rule 3. Proceedings of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties in A. Ph. A. Journal: That space be annually set aside in the Journal of the American Pharmaceutical Association for abstracts of the proceedings of the meetings of the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties.

Rule 16. The Editor-in-Chief of the Journal shall be ex-officio Historian of the Association.

When the Historian was first elected, which was by resolution and not by by-law, the Association had no Journal and no Editor; now, it seems both fitting and logical that the Editor be made the Historian, and we so recommend.

GENERAL RULES OF FINANCE.

Rule 4. Deposits in Banks: Insert word "daily" before "deposit," and in lieu of words after bank state "whenever his receipts amount to $100 or more."

The amended rule will then read:

"Rule 4. Deposits in Banks. The Treasurer shall make a daily deposit in the bank whenever his receipts amount to $100 or more."

Rule 8. Auditing of Accounts of Treasurer and General Secretary. Use word "February" in place of "January" on last line.

The amended rule will then read:

Rule 8. Auditing of Accounts of Treasurer and General Secretary. The Treasurer and General Secretary having thus balanced their books and made out their reports, shall place all such books, accounts, vouchers, etc., with the report, at the disposal of the Chairman of the Auditing Committee at such time and place in February of each year as said Chairman may direct.

Rule 10. Meeting of Auditing Committee. Change word "January" in second line to "February," and "February" in next to last line to March.

The amended rule will then read:

Rule 10. Meeting of Auditing Committee. There shall be a meeting of the Auditing Committee in February of each year, and it shall be the duty of said Committee, at such meeting, to carefully examine all the books, accounts, vouchers, funds, etc., etc., received by them; and previous to the first day of March following, to make a report thereon, in writing, to the Chairman of the Council.

CODE OF ETHICS.

The Code of Ethics of the American Pharmaceutical Association was first published in 1853, and has not been published since. A copy is here attached. Changes have occurred during the past sixty-two years which make it desirable to change or amend some portions of the Code if in no other respect than phraseology. We, therefore, recommend that a special committee of three be appointed by the Chairman of the Council to revise the Code of Ethics, to report at next year's meeting of the Association.

Respectfully submitted,

J. W. ENGLAND, Chairman.

CODE OF ETHICS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The American Pharmaceutical Association, composed of Pharmacists and Druggists throughout the United States, feeling a strong interest in the success and advancement of their profession in its practical and scientific relations, and also impressed with the belief that no amount of knowledge and skill will protect themselves and the public from the ill effects of an undue competition, and temptations to gain at the expense of quality, unless they are upheld by high moral obligations in the path of duty, have subscribed to the following *Code of Ethics* for the government of their professional conduct.

Art. I. As the practice of pharmacy can only become uniform by an open and candid intercourse being kept up between apothecaries and druggists among themselves and each other, by the adoption of the National Pharmacopœia as a guide in the preparation of official medicines, by the discontinuance of secret formula and the practices arising from a quackish spirit, and by an encouragement of that *esprit du corps* which will prevent a resort to those disreputable practices arising out of an injurious and wicked competition. *Therefore,* the members

of this Association agree to uphold the use of the Pharmacopœia in their practice; to cultivate brotherly feeling among the members, and to discountenance quackery and dishonorable competition in their business.

Art. II. As labor should have its just reward, and as the skill, knowledge and responsibility required in the practice of pharmacy are great the remuneration of the pharmaceutist's services should be proportioned to these, rather than to the market value of the preparations vended. The rate of charges will necessarily vary with geographical position, municipal location, and other circumstances of a permanent character, but a resort to intentional and unnecessary reduction in the rate of charges among apothecaries, with a view to gaining, at the expense of their brethren, is strongly discountenanced by the Association as productive of evil results.

Art. III. The first duty of the apothecary, after duly preparing himself for his profession, being to procure good drugs and preparations (for without these his skill and knowledge are of small avail), he frequently has to rely on the good faith of the druggist for their selection. Those druggists whose knowledge, skill and integrity enable them to conduct their business faithfully, should be encouraged, rather than those who base their claims of patronage on the cheapness of their articles solely. When accidentally, or otherwise, a deteriorated, or adulterated drug or medicine is sent to the apothecary, he should invariably return it to the druggist, with a statement of its defects. What is too frequently considered as a mere error of trade on the part of the druggist, becomes a *highly culpable* act when countenanced by the apothecary; hence, when repetitions of such frauds occur, they should be exposed for the benefit of the profession. A careful but firm pursuit of this course would render well-disposed druggists more careful, and deter the fraudulently inclined from a resort to their disreputable practices.

Art. IV. As the practice of pharmacy is quite distinct from the practice of medicine, and has been found to flourish in proportion as its practitioners have confined their attention to its requirements; and as the conducting of the business of both professions by the same individual involves pecuniary temptations which are often not compatible with a conscientious discharge of duty; we consider that the members of this Association should discountenance all such professional amalgamation; and in conducting business at the counter, should avoid prescribing for diseases, when practicable, referring applicants for medical advice to the physician. We hold it as unprofessional and highly reprehensible for apothecaries to allow any percentage or commission to physicians on their prescriptions, as unjust to the public, and hurtful to the independence and self-respect of both the parties concerned. We also consider that the practice of some physicians (in places where good apothecaries are numerous) of obtaining medicines at low prices from the latter, and selling them to their patients, is not only unjust and unprofessional, but deserving the censure of all high-minded medical men.

Art. V. The important influence exerted on the practice of pharmacy by the large proportion of physicians who have resigned its duties and emoluments to the apothecary, are reasons why he should seek their favorable opinion and cultivate their friendship, by earnest endeavors to furnish their patients with pure and well-prepared medicines. As physicians are *liable* to commit errors in writing their prescriptions, involving serious consequence to health and reputation if permitted to leave the shop, the apothecary should always, when he deems an error has been made, consult the physician before proceeding; yet in the delay which must necessarily occur, it is his duty, when possible, to accomplish the interview without compromising the reputation of the physician. On the other hand, when apothecaries commit errors involving ill consequences, the physician knowing the constant liability to error, should feel bound to screen them from undue censure, unless the result of a culpable negligence.

Art. VI. As we owe a debt of gratitude to our predecessors for the researches and observations which have so far advanced our scientific art, we hold that every apothecary and druggist is bound to contribute his mite towards the same fund, by noting the new ideas and phenomena which may occur in the course of his business, and publishing them, when of sufficient consequence, for the benefit of the profession.

Recommendation No. 1 on Chapter I, Article II, of By-Laws, was amended to read:

Article II. The Nominating Committee shall submit the names of three persons as candidates for each of the offices of President, First Vice President, Second Vice President, Third Vice President and three members of the Council. These names are to be submitted by the General Secretary by mail to every member of the Association within three months after he receives them, together with a request that the member indicate his preference on a ballot enclosed for that purpose, and return the same by mail within one month after its receipt.

The amended recommendation was approved.

Recommendation No. 2 on Chapter II, Article VII, of By-Laws.

W. C. Alpers moved, seconded by C. E. Caspari, that the recommendation be approved.

H. P. Hynson moved, seconded by C. A. Mayo, to amend to provide that:

Article VII. He shall appoint all committees provided for in the By-Laws at the time of his installation and all committees not provided for in the By-Laws within thirty days after his installation.

J. H. Beal, seconded by J. A. Koch, moved as a substitute for the original article an additional clause to read as follows:

Article VII. He shall appoint all committees, not provided for in the By-Laws or otherwise directed by the Association. He shall announce the names of the appointees of such committees, as far as possible, at the time of his installation or within thirty days thereafter.

The original motion and the amendment being withdrawn, the substitute motion was adopted.

Recommendation No. 3 on Chapter VIII, Article V, of By-Laws was considered, and on motion of C. A. Mayo, seconded by H. P. Hynson, action was deferred for the present.

Recommendation No. 4 on Chapter XII, Article I, of By-Laws was approved.

Recommendation No. 5 on Chapter III, Article II, of By-Laws was approved.

Recommendation No. 6 on General Rule No. 3 was approved.

A new rule was proposed (No. 16) by the Committee to read as follows:

Rule 16. Editor as Historian: The Editor-in-Chief of the Journal shall be ex-officio Historian of the Association.

Approved.

Under "General Rules of Finance" a number of changes were proposed, the amended rules to read as follows:

Rule 4. Deposits in Banks. The Treasurer shall make a daily deposit in the bank whenever his receipts amount to $100 or more.

Approved.

Rule 8. Auditing of Accounts of Treasurer and General Secretary. The Treasurer and General Secretary having balanced their books and made out their reports, shall place all such books, accounts, vouchers, etc., with the report, at the disposal of the Chairman of the Auditing Committee, at such time and place in February of each year as said Chairman may direct.

Approved.

Rule 10. Meeting of Auditing Committee. There shall be a meeting of the Auditing Committee in February of each year, and it shall be the duty of said Committee at such meeting, to carefully examine all the books, accounts, vouchers, funds, etc., etc., received by them, and previous to the first day of March following, to make a report thereon, in writing to the Chairman of the Council.

Approved.

The recommendation of the Committee on Revision of Constitution and By-Laws to revise the Code of Ethics was, in the light of information given by W. C. Alpers, amended to provide that a special committee of three be appointed, by the Chairman of the Council to inquire into the subject of the Code of Ethics and report at the next annual meeting. Dr. Alper's belief was that the Code of Ethics has been superseded, some ten years ago, by the "objects" stated in the Constitution.

Under "General Rules of Finance," H. M. Whelpley suggested the deletion of Rule 12, which reads as follows:

Rule 12. Publication of Names of Members. The Treasurer shall furnish with his annual report an alphabetical list of the names of the members from whom he has received money for dues and certificates during the financial year for publication in the Proceedings.

On motion of C. A. Mayo, seconded by F. J. Wulling, it was agreed to delete Rule 12, and properly number the succeeding "Rules."

Wm. B. Day moved, second by H. M. Whelpley, to have amended Chapter III Article I, of the By-Laws of the Council by adding the words "and the amount of his expenses incident to the meeting, in addition to his salary."

The article will then read:

Article I. The Secretary of the Council shall keep fair and correct minutes of the proceedings of the meetings and carefully preserve all reports and papers of every description

received by the Council. He shall receive an annual salary not to exceed $300, and the amount of his expenses incident to the meeting, in addition to his salary.

Approved.

W. C. Alpers proposed, seconded by W. B. Day, that Chapter II, Article VIII, of By-Laws be amended, deleting the words "and countersign all orders on the Treasury."

The amended article will then read:

Article VIII. He shall sign the certificates of membership. He shall obey the instructions of the Association, and authenticate by his signature, when necessary, its proceedings.

Approved.

H. M. Whelpley suggested that Article I of Chapter IV of the By-Laws be deleted, and on his motion, seconded by Charles E. Caspari, the change was approved; the succeeding numbers of the articles to be properly renumbered. It was further agreed that the word "He" at the beginning of the present Article II, should be changed to "Local Secretary."

The article as amended would then read:

Article I. The Local Secretary shall assist the General Secretary in his duties; shall co-operate with the Council and any Local Committee in making arrangements for the annual meeting; shall correspond with the chairman of the several committees, and with other members in advance of the meeting, for the promotion of its objects, and shall have the custody of specimens, papers and apparatus destined for use or exhibition at the meetings.

Approved.

Article III shall be made Article II.

Approved.

On motion of W. B. Day, seconded by J. W. England, it was decided to have amended Chapter III, Article III, of By-Laws, providing for notification of the President and Local Secretary when elected of the duties of their offices, etc., the article to read:

Article III. He shall read all papers handed him by the President for that purpose, shall call and record the ayes and nays, whenever they are required to be called, shall notify the President, Local Secretary and the chairman of every standing and special committee of his election or appointment, giving each a statement of his duties and such other information as may be of service.

The report of the Committee of the Council to consider the question of representation in and function of the House of Delegates was then presented as follows:

To the Council of the American Pharmaceutical Association:

GENTLEMEN—At the Detroit meeting, the Council appointed a Committee of three to consider the question of Representation in and Functions of the House of Delegates.

At a session of the House of Delegates, the Committee on Resolutions of that body presented the following resolutions which were adopted:

"WHEREAS, The usefulness of the House of Delegates during its two years' existence, not having been such as was expected at the time of its installation, it is important that something be done to increase this usefulness; therefore, be it

Resolved, That it is the sense of the House of Delegates that increased efficiency can be secured by making this body a permanent one instead of making its existence dependent upon the action of the Council."

When the above resolutions were presented to the Council, they were referred to the Council's Committee on Representation in and Function of the House of Delegates. The House of Delegates itself, likewise, appointed a committee to consider this subject.

Both of these committees have been endeavoring to determine upon a plan for the reorganization of the House of Delegates as a permanent organization. To define a distinct field of activity and usefulness for such an organization and to formulate rules of procedure by which it could properly exercise certain duties and authorities that would harmonize with the work of this Association and permit of a close co-operation of all of these allied pharmaceutical societies along lines that would not in the least detract from the objects, aims and purposes of the American Pharmaceutical Association.

As a permanent organization, the House of Delegates should become the means for co-ordinating the work and effectually combining the influence of the national, state and local pharmaceutical societies and for securing a closer affiliation among such associations and with the American Pharmaceutical Association.

The efficiency of such an organization will depend very largely upon the zeal of the executive officers selected and the enthusiasm and co-operation of the allied organizations. There are many topics discussed at the meetings of the state pharmaceutical associations, as well as in the local branches of the American Pharmaceutical Association and local pharmaceuti-

cal societies, that are of more than local interest as they affect the progress of the calling throughout the entire country. These questions of common interest should be carefully debated by the delegates of these various bodies in a national convention, where they could outline a course of action that would secure co-operation throughout the entire country. Such questions as uniform pharmacy practice acts, anti-narcotic acts, state laws affecting the purity of drugs, labelling, etc.; pharmaceutical educational problems such as preliminary education, standards for registration; reciprocity in registration, etc., are among some of those that may be mentioned as topics of common interest and not circumscribed by municipal or state boundaries.

Your Commitee are of the opinion that the establishment of such a permanent delegate body should be determined at this time. As to the membership, we would recommend that it be limited to not more than three delegates from each local branch of the American Pharmaceutical Association, each state pharmaceutical association, each local pharmaceutical organization, pharmacy school, or alumni association of a pharmacy school. In addition, the officers of the American Pharmaceutical Association and of its Council and a delegation of three members selected by the Council, should be considered as *active members* of the House of Delegates, and any member of the American Pharmaceutical Association should have the privilege of the floor, even though not appointed as a delegate. Would it not be wise to also include as delegates a delegation from and the officers of the National Association of Retail Druggists and the National Wholesale Druggists' Association as these organizations have very many interests in common with those of pharmaceutical societies. No delegate should be permitted to officially act as a representative from more than one society at the same meeting.

As to the functions of the House of Delegates, these have been set forth in Chapter I, Article I, of the By-Laws of the House of Delegates of the American Pharmaceutical Association in the following language:

"A. To receive and consider the reports of delegates from the bodies which they represent in the House of Delegates.

B. Consider and report upon such resolutions, and upon such other subjects as may be referred to the House of Delegates by the Council (of the A. Ph. A.) or by the Association (A. Ph. A.) in general session, or by the various Sections (of the A. Ph. A.).

C. Make a final report of the business transacted by the House of Delegates to the final session of the outgoing Council at each annual meeting.

D. It shall have the authority to adopt all rules and regulations necessary for the proper conduct of its business and not inconsistent with the Constituion and By-Laws of the Association and the Council."

Your Committee are of the opinion that the functions to be exercised by the House of Delegates are fairly well defined in A and B in the article as quoted. If any fault can be found at all it would be with the improper reference, at times, of certain resolutions and subjects to the House of Delegates which were purely matters connected with the internal management of the American Pharmaceutical Association itself. Now that we have established a Committee on Resolutions of the Association, it will be easy for the Association in general session or for its Council, to properly refer to either body questions of reference.

The resolutions by which the House of Delegates was created at the Denver meeting and the paragraphs C and D of Article I of the By-Laws of the House of Delegates quoted above, indicate that the House of Delegates as originally conceived was to be, in effect, a section or a committee of the American Pharmaceutical Association, and its actions, rules and regulations were to be subject to report to and approval by the Council of the American Pharmaceutical Association. If the American Pharmaceutical Association is to continue to control and dominate the House of Delegates, then no material changes in the statements of paragraphs C and D are necessary.

On the other hand, it has been argued that the "House of Delegates shall be composed of delegates" from certain pharmaceutical associations who are "to have uniform and exclusive representation" in the proposed re-organized House of Delegates and they are to have "sole control" of this organization. This might be construed as intending to create a new and independent body. If such be the concensus of opinion, then, necessarily, changes must be made in the wording of paragraphs C and D.

Your Committee are of the opinion that the House of Delegates should remain as the House of Delegates of the American Pharmaceutical Association. The more close the affiliation of the allied pharmaceutical societies and the American Pharmaceutical Association, the more efficient should be the work accomplished in behalf of all of the societies thus associated.

The various allied organizations, such as the state pharmaceutical associations, should be encouraged to refer through their delegates to the House of Delegates, all questions of national import or of common interest to druggists. An examination of the proceedings of the state associations will demonstrate that there are many such questions that should be more thoroughly discussed and concerted action outlined thereon by some such national body as the House of Delegates.

Your Committee are, therefore, not prepared to recommend that any radical changes be

made in the definition of the functions of the House of Delegates. This question can probably be left to the future to decide what changes, if any, should be made in the wording of the functions as now formulated.

We would urge that the consensus of opinion on this subject, as demonstrated at this meeting, be made the basis for an amendment to the By-Laws which shall provide for the permanent establishment of the House of Delegates of the American Pharmaceutical Association.

Respectfully submitted,

GEORGE M. BERINGER, Chairman.

Discussion was had upon the subject of the report.

H. P. Hynson spoke at length, giving his views, being followed by J. P. Remington, W. C. Alpers and F. J. Wulling and others.

On motion of Dr. H. M. Whelpley, seconded by H. P. Hynson, the report of the Council Committee on Representation in and Function of the House of Delegates was referred to the House of Delegates, to be returned to the Council for further consideration.

The following report was presented and received:

Report on Invested Funds of the Association.

St. Loius, Mo., June 11, 1915.

To the Officers and Members of the American Pharmaceutical Association:

We, the undersigned, have, in accordance with Rule 8 of General Rules of Finance, examined the securities contained in the Association Box (4227) at the Title Guaranty Trust Co., St. Louis, and found the following:

Ebert Legacy Fund.

St. Louis Bond No. 766	$2,000.00

A. Ph. A. General Fund Bonds.

5 St. Louis City Reg. 4 percent Bonds, Nos. 705, 706, 707, 708, 709	$5,000.00
1 St. Louis City Reg. 4 percent Bond, No. 717	5,000.00
Total	$10,000.00

A. Ph. A. Centennial Fund Bond.

1 Mass. State Reg. 3 percent Bond, No. 1705	$1,000.00

A. Ph. A. Life Membership Fund Bonds.

1 Mass. State Reg. 3 percent Bond, No. 1701	$10,000.00
3 Mass. State Reg. 3 percent Bonds, Nos. 1702, 1703, 1704	3,000.00
Total	$13,000.00

A. Ph. A. Procter Monument Fund.

Certificate of Deposit, No. 62,205, dated January 2, 1915, International Bank of St. Louis, (Principal)	$4,812.46

H. M. WHELPLEY,
Treasurer.

FRED W. SULTAN,
Member, Auditing Committee.

Subscribed and sworn to before me this eleventh day of June, 1915.
(Seal)

SIDNEY SCHIELE,
Notary Public, City of St. Louis, Mo.

The report of the Auditing Committee was presented and received:

REPORT OF THE AUDITING COMMITTEE.

To the Officers and Members of the American Pharmaceutical Association:

We have examined the books of Henry M. Whelpley and W. B. Day, respectively Treasurer and General Secretary of the American Pharmaceutical Association for the fiscal year 1914 and compared the records with the vouchers and found them correct. We have found a proper accounting for all of the funds of the Association. The cash balance to January 1, 1915, corresponds with the books of the International Bank of St. Louis and the registered bonds and certificate of deposit in the hands of the Treasurer.

Auditing Committee,
OTTO F. CLAUS, Chairman,
FRED W. SULTAN,
ALFRED W. PAULEY.

St. Louis, Mo., June 11, 1915

The report of the Commission on Proprietary Medicines was presented in abstract by Chairman James H. Beal.

On motion of F. H. Freericks, seconded by W. B. Day, the report was accepted and ordered to be reprinted in pamphlet form from the Journal and was referred to the Joint Session of the Sections on Education and Commercial Interests.

On motion of H. P. Hynson, seconded by J. W. England, it was moved that the General Secretary be authorized to vise hereafter for the Council the credentials of delegates to the Association.

The following reports were submitted and accepted:

To the Council of the American Pharmaceutical Association:

I have the honor to report on behalf of the Committee on Unofficial Standards that the following monographs have been adopted and forwarded to the Editor for publication in the Journal of the American Pharmaceutical Association in accordance with the resolution adopted by the Council. Yours very truly,

GEORGE M. BERINGER, Chairman.

Pareira, Phytolacca, Pimenta, Plumbi Iodidum, Potassii Chloridum, Potassii Glycerophosphas, Prunum, Pulsatilla, Quercus, Quillaja, Renninum, Rhus Glabra, Rubus, Rumex, Salvia, Santalum Album, Sassafras Medulla, Scutellaria, Sodii Nitras, Tamarindus, Terebinthina, Viburnum Opulus, Xanthoxylum Fructus, Zea, Zedoaria.

To the Council of the American Pharmaceutical Association:

I have the honor of presenting a supplemental report on behalf of the Committee on Unofficial Standards.

I have transmitted to the Editor for publication in the Journal, in accordance with the instruction of the Council, the following monographs:

Ferri Pyrophosphas Solubilis, Ficis, Galega, Geranium, Gossypii Cortex, Hæmatoxylon, Hamamelidis Folia, Helianthemum, Ignatia, Kaolinum, Krameria Lappa, Leptandra, Lupulinum, Mangani et Sodii Citras, Mangani Hypophosphis, Mastiche, Melilotus.

Yours very truly,

GEORGE M. BERINGER, Chairman.

The following applications were received and the applicants elected:

No. 284. Emory W. Thurston, 4003 N. Griffin Ave., Los Angeles, Cal., rec. by Hayden M. Simmons and Wilbur J. Teeters.

No. 285. Bert George Dyne, Main St., Las Cruces, New Mexico, rec. by E. G. Eberle and Wm. B. Day.

No. 286. Hendery Allison, Kingsville, Texas, rec. by R. H. Walker and E. G. Eberle.

No. 287. B. L. Eicher, 74 E. 12th St., Chicago, Ill., rec. by Clyde M. Snow and Wm. B. Day.

Adjourned until Tuesday, August 10th, at 7:30 p. m.

J. W. ENGLAND, Secretary.

THIRD SESSION, 1914-15.

The third session of the Council of the American Pharmaceutical Association for 1914-15 was held at the Hotel Bellevue, San Francisco, on Tuesday evening, August 10, 1915, at 8 p. m., Chairman E. G. Eberle in the chair.

Present: Messrs. Eberle, Freericks, Godding, Claus, Alpers, Whelpley, Gietner, England, Day, Osseward and Thiesing.

On motion, the reading of the minutes of the previous session was dispensed with.

The following applications for membership were presented and the applicants elected:

No. 288. Edward Sydney McKee, 2132 Linton Ave., Cincinnati, Ohio, rec. by Caswell A. Mayo and Frank H. Freericks.

No. 289. Leslie D. Robinson, 1314 Bay View Place, Berkeley, Cal., rec. by John M. Dawson and Albert Schneider.

No. 290. Fred Mueller, 2129 University Ave., Berkeley, Cal., rec. by John H. Dawson and Albert Schneider.

No. 291. Dr. Andrew D. Mouledons, 3622 Laurel St., New Orleans, La., rec. by W. B. Day and J. W. England.

No. 292. Joseph Thomas Balter, 3601 Magazine St., New Orleans, La., rec. by E. G. Eberle and J. W. England.

No. 293. Dr. Joseph Oswald Weilbaecher, 2100 N. Claiborne Ave., New Orleans, La., rec. by E. G. Eberle and J. W. England.

No. 294. Fred Dawson, Albany, Ore., rec. by John M. H. Lane and C. M. McKellips.

No. 295. Francis Albert Federer, 1015 University Ave., Madison Wis., rec. by H. A. Langenhan and Emerson R. Miller.

No. 296. Elgar Otis Eaton, 33 U. S. Appraisers Store, San Francisco, Cal., rec. by John H. Dawson and Wm. B. Day.

No. 297. Robert Fulton Troxler, Quarantine Station, Angel Island, Cal., rec. by Dr. H. M. Whelpley and J. W. England.

No. 298. John J. Mahoney, 500 Church St., San Francisco, Cal., rec. by Franklin T. Green and R. H. Bohmansson.

No. 299. John Y. Breckenridge, Jr., U. S. Marine Hospital, Boston, Mass., rec. by A. M. Roehrig and F. T. Gordon.

No. 300. Charles Levin Morgan, Half Moon Bay, Cal., rec. by J. L. Lengfeld and E. G. Eberle.

No. 301. Ada Lee Howell, 194 S. Main St., Akron, Ohio, rec. by Mary L. Creighton and Zada M. Cooper.

The report of the Committee on Publication was presented as follows:

To the Members of the Council:

GENTLEMEN—*Printing N. F. (IV)*: Prior to the Detroit (1914) meeting the Committee on publication invited bids from eight of the most prominent book publishers of the country for the composition, electrotyping, printing and binding of the National Formulary (IV), and the communications were opened by the Committee at Detriot. The two lowest bidders were the J. B. Lippincott Company and Wm. J. Dornan, both of Philadelphia, the former being the lower, and to this company was awarded the contract, the Committee on Publication being empowered to make the necessary contract as soon as possible by reason of war conditions.

An advantageous arrangement has been made with the J. B. Lippincott Co., whereby the books can be printed, and then bound from time to time, as the demand requires and paid for only when bound. By this method, the amount of money to be paid out by the Association at one time is reduced to the minimum, and the indetbedness will probably never exceed one thousand dollars.

The first issue will be 5000 copies, subsequent issues as may be reqiured. The book will number 400 or more pages. It will be bound in muslin, in buckram, and in buckram interleaved.

The book is now in press, and will be pushed to completion as rapidly as possible.

Agency and Sale of N. F. (IV): At the Detroit (1914) meeting of the Association, the Committee on Publication was authorized to secure bids and make the necessary contract for the agency and sale of the National Formulary, Fourth Edition.

Invitations for bids were invited from six of the leading book distributing companies of the country. The Midland Publishing Company, of Columbus, O., and the J. B. Lippincott Co., of Philadelphia, were the two best bidders; the former being the more advantageous, the contract was awarded to that company.

The selling prices of the N. F. (IV) will be $2.50 per copy for the muslin bound copy, $2.75 for the buckram bound copy, and $4.00 for the buckram interleaved copy. The buckram bound copy probably will be the most durable and the sale of this form of binding should be especially encouraged.

Sub-agents will be appointed in the cities of New York, Philadelphia, St. Louis, Chicago, and San Francisco, who will allow discounts as follows:

25 copies or less, 15 percent.
25 to 100 copies, not less than 20 percent.
100 copies (or more) not less than 25 percent.
Single copies, full retail price.

Year Book, 1913 (Volume 2): Bids for the composition, printing and binding of the Year Book, 1913, (Volume 2), were invited from the J. B. Lippincott Co., of Philadelphia, the Stoneman Press Co., of Columbus, Ohio, W. J. Dornan, of Philadelphia, and the Eschenbach Printing Co., of Easton, Pa.

The Eschenbach Printing Co. was the lowest bidder, and the contract was awarded to this company by the Committee on Publication, which action was approved by the Council (Council Letter No. 20, March 19, 1915).

Advertising Manager of Journal: It will be recalled that, on February 1, 1914, E. C. Marshall began service as Advertising Manager of the Journal, receiving a salary of $125 per month and continued as such until June 1, 1914, when he was made Acting Editor and Acting General Secretary (by reason of the resignation by illness of Dr. James H. Beal as Editor of the Journal and General Secretary of the Association); receiving a salary of $250 per month for the months of June, July and August, 1914.

Editor of Journal: At the Detroit (1914) meeting the matter of selecting an Editor for the Journal was referred to the Committee on Publication, with power to act, subject to the approval of the Council.

Mr. Marshall was then engaged as Acting Editor to serve from month to month until a permanent Editor could be chosen. This acting service began September 1, 1914, at a salary of $187.50 per month.

At the Detroit meeting the position of Editor was offered to Eugene G. Eberle by the Committee on Publication, and he promised to decide later. He presented his formal application on December 1, 1914 (C. L. No. 13, January 4, 1915) and was unanimously elected by the Committee on Publication, which action was ratified by the Council (C. L. No. 18, March 4, 1915). Mr. Eberle assumed the duties of the Journal office on April 6, 1915.

Mr. Marshall was relieved from duty as Acting Editor on April 6, 1915, and given three weeks vacation with pay at the same rate of pay he had been receiving, which action was approved by the Council (C. L. No. 22, April 10, 1915).

Salaries of Journal Officials: At the time he presented his resignation, Dr. James H. Beal was being paid a salary of $4000 per year as Editor and General Secretary, and E. C. Marshall was receiving a salary of $1500 a year as Advertising Manager, a total of $5500.

Editor Eberle is receiving a salary of $3500 a year and General Secretary Day a salary of $750 a year, a total of $4250. We have thus been enabled to economize in the salaries to the extent of $1250 per annum.

Reading Pages of Journal: The number of reading pages of the Journal in 1914 was 1758, and in 1913 was 1600, an increase of 158. In 1912 the number was only 1466. We believe that the number of pages per month can be reduced from 146 pages to not more than 128 per month without detriment and have instructed the Editor to do this whenever possible.

Receipts for Journal: The receipts of the Journal from advertisements were $3564.05 and from subscription $300.84 or a total of $3864.89, an increase of $469.09. The increased receipts were chiefly from subscriptions.

Expenditures for Journal: The expenditures for the Journal for 1914 were $5863.32, plus the Editor's and General Secretary's salaries of $3666.66 (from which should be deducted the salary of the General Secretary, estimate at $750) which would equal $2916.66 net, or a total of $8779.98, being an increase in Journal-cost of $397.49 and editorial-cost of $783.53, or a total increase of $1181.02.

Net Cost of Journal: The net cost of the Journal for 1914 was $4915.09 and for 1913 was $4203.16, an increase of $711.93.

Expenditures for Year Book: The Year Book for 1913 (Volume 2) corresponding to Volume 61 of the former Proceedings of the Association will probably be distributed this month but the bills have not yet been received. The previous volume, issued in June, 1914, cost $1718.99 for the printing and $244.99 for the binding, or a total of $1963.98, which including the salary ($1200) of the Reporter on the Progress of Pharmacy, amounts to $3163.98.

General Rules of Publication: At the Detroit (1914) meeting, the Committee on President's Address reported favorably upon the suggestion of President Beringer that the Committee on Publication be given enlarged powers for the conduct of its work, and the recommendation was referred to the Council. Later (C. L. No. 2, Oct. 2, 1914) the Council authorized the Committee on Publication to effect a re-organization and systematize its work, and the following "General Rules of Publication" were recommended by the Committee on Publication and approved by the Council (C. L. No. 12, Dec. 26, 1914):

General Rules of Publication.

1. All bills on account of the Journal shall be certified to by the Editor and sent as soon as possible to the Chairman of the Committee on Publication for approval and then sent by the latter to the General Secretary for payment in accordance with Article II, Chapter V, of the By-Laws, and Rule Third of the General Rules of Finance, except bills for postage, stationery, drayage, freight, expressage, miscellaneous and clerical expenses of the Office of the Journal (Petty and Clerical Expenses, Journal Office) which shall be paid as provided for in Rule 2 of these rules.

2. Bills for postage, stationery, drayage, freight, expressage, miscellaneous and clerical expenses of the office of the Journal (Petty and Clerical Expenses, Journal Office) shall be paid by check by the Editor of the Journal by the American Pharmaceutical Association in a bank to be approved by the Committee on Publication.

The Editor shall be bonded for $500 at the expense of the Association.

The procedure for the payment of such bills shall be as follows: (1) at the end of each month, the Editor shall send all paid-and-receipted bills and cancelled checks, with an itemized bill or statement, to the Chairman of the Committee on Publication for approval; (2) After approval the Chairman of the Committee on Publication shall send the bills and checks to the General Secretary for payment in accordance with Article II, Chapter V, of

the By-Laws and Rule Third of the General Rules of Finance, and (3) the Treasurer shall send the Editor a check to cover the amount of the bills and thus increase the bank balance.

3. All bills on account of the Year Book, National Formulary and other publications of the Association shall be certified to by the person contracting the same and approved by the Chairman of the Committee on Publication and sent by the latter to the General Secretary before payment in accordance with Article II, Chapter V, of the By-Laws and Rule Third of the General Rules of Finance.

The advantages of this method are many. It is simpler than having a Treasurer of the Committee through which to pay bills and it does not require that one-fourth of the annual appropriation of each item of the work of the Committee shall be paid each quarter to the Treasurer. The present machinery for the payment of bills is continued, the only change being the control to be given to the Chairman of the Committee on Publication in the pay- appropriation of each item of the work of the Committee shall be paid each quarter to the ment of bills. In addition, the items of the annual budget of appropriations will not need to be changed.

Furthermore, the $300 is practiacally advanced or loaned to the Editor under bond and the bills are really not finally paid by the Association until the Treasurer sends the check each month to cover the amount of vouchers paid, so that the Association is protected in every way.

Papers for the Journal: Article II of Chapter X of the By-Laws provides that papers presented to the Association and its Branches shall become the property of the Association with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication.

This article has been the cause of some discussion by contributors as well as by those interested in other journals. The rule, however, has been liberally construed and the privileges of advance publications by other journals has been given whenever asked for.

The American Pharmaceutical Association must be fair to the authors of pharmaceutical papers, but it must, also, be fair to its own interests, which are the interests of *all* its members.

To abolish this By-law would be to seriously cripple the Journal and the interests of the American Pharmaceutical Association.

Dr. James H. Beal referred to this subject at the last annual meeting in his "Report of the Retiring General Secretary and Editor of the Journal." (Journ. A. Ph. A., 1914, 1252), and his opinion deserves careful consideration. He said that:

"The papers and communications presented at the annual meeting and before the local branches may be roughly divided into those which are of general or popular nature, and consequently interesting to the casual reader, and those of a strictly scientific character which, notwithstanding their great usefulness to the progress of pharmacy, appeal only to a limited class of technical workers. If the rule requiring the consent of the Publication Committee be abolished, the probable result would be that the papers of a popular character would receive early publication in other journals and, consequently would be considered stale when printed in the official Journal; while to the latter would fall the exclusive publication only of such papers as were of technical and scientific nature.

The rule reserving the exclusive right to first publication in the official organ is a common one among scientific and professional organizations, and as far as my observation extends, has never been seriously objected to except in the case of the American Pharmaceutical Association.

Unless very good reasons can be cited to the contrary, it would seem better that the present rule be continued, with the understanding that the Committee on Publication shall have liberal discretionary power to give consent to the prior publication in the other journals of the papers presented at the annual meeting and before the local branches.

It should be remembered in this connection, that the Journal is in no sense a competitor of other drug publications. The necessity for requesting permission to print a paper before its appearance in the Journal certainly does not impose any serious hardship, and since the Journal is an exclusive Association organ, and does not infringe upon the general field of drug journalism, there should be no more objection to quoting from its pages than to quoting from a government publication."

There has been some delay during the past year in the publication in the Journal of papers read before the Local Branches, due, largely to the changes in editorial management. The Cincinnati Branch submits the following motion with the view of correcting this condition:

"That it be the sense of this Association, that any paper presented before the Cincinnati Branch and recommended for publication in the Journal, be passed upon for acceptance or rejection within fifteen days, and reported back to the Branch."

There can be no serious objection to this motion. As a rule, the Editor should be able to accept or reject any paper sent him within fifteen days after he has received it.

But it is not always within his power to give immediate publication. He must cut his garment according to his cloth.

There is a bigger question involved, however, than the mere acceptance or rejection of papers, and it is fundamental. One of the most serious defects of pharmaceutical and medical papers generally, is their undue length. If authors could only be made to realize that the briefer a paper—all things being equal—the stronger. We had a paper recently of 40 pages—embodying a whole lot of good work—but the author could have made several excellent papers out of it.

We should have a rule limiting the length of papers for the Journal—excluding reports, statistics, etc. The Editor should be instructed to use discretionary power to abstract papers of undue length, to cut out tautology and repetition, and to delete matter foreign to the subject.

As Dr. F. J. Wulling expresses it: "The world is growing too busy to waste time with non-essentials. I have often suggested that every author of a paper should be required (not merely requested) to accompany his paper with a synopsis so written that its text would comprise about one-tenth or less that of the paper itself, and embody in the concisest form possible the gist of the paper. Readers could then determine by a perusal of the synopsis whether they want to go through the paper. Such a rule would result, I believe, in greater publicity for every paper."

It seems to us that Dr. Wulling's suggestion is most worthy and we recommend its adoption. We should have "Rules" not only for the acceptance and rejection of papers, and to give greater liberty of action to those who present papers, but also, to give the Editor discretionary power to cut-down the size of papers (of course, by co-operating with the author). By encouraging the preparation of briefer papers, a larger number of members of the Association could secure earlier publication of their articles.

Furthermore, we should take steps to encourage research work, especially by the members of Local Branches, so that more and more good work would be done, and more and more good papers would be written. It might be well to go a step further and that is, to follow the example of the American Medical Association, which issued last year a pamphlet entitled "Suggestions to Medical Authors" (price 10 cents) giving admirable suggestions for the proper preparation of a medical article. In like manner, we could issue a pamphlet for pharmaceutical authors; and it should be much appreciated.

Semi-Monthly Issues of Journal: The suggestion has been made to issue the Journal of the American Pharmaceutical Association semi-monthly, that is, to give in the first issue of the month editorials, articles and general and legal news, and in the second issue of the month reports of the Association, Section, Branch and Council proceedings and the Report on the progress of Pharmacy, similar to the former Proceedings of the Association, but no papers.

In other words, the first issue would be a Journal of original papers and pharmaceutical news and the second issue would be given over to the business of the Association, its Sections, Branches and Council.

The Committee on Publication has given very careful consideration to this suggestion, but it is of the opinion that the Association is not in a financial position at this time to consider the printing of a semi-monthly Journal. The expense of getting out another issue monthly, with the exception of the office expenses and the salary of the Editor, would be doubled. If the members of the Association could be persuaded to assist the Association in securing advertisements for the Journal and increase our revenues, then in the course of a few years, we might be in a position to consider the issuance of two journals a month, but the increase of revenue from dues through the accession of membership is entirely too slow to provide any large increase of funds.

Furthermore, there is one feature of our Year Book which cannot be too strongly emphasized, a feature which makes it distinctly superior to the monthly reviews of current, scientific literature, and this is, that the *Year Book gives all the subject matter of related character for the year in one place,* so that a comprehensive review or survey of the literature upon any one subject can be readily and quickly made without making extended references in different parts of twelve different issues.

Hence, the judgment of the Committee on Publication is against the issuance of a semi-monthly Journal.

Lloyd Library—Stock of Proceedings, etc.: In accordance with the decision of the Detroit (1914) meeting to accept with thanks the very generous offer of the Lloyd Library to care for the Proceedings, etc., of the Association, the publications in question have been delivered to the Lloyd Library, and General Secretary Day has made the necessary arrangements to store the historical and other matters of the Association not taken care of by the Library.

Office of Journal: A decision will have to be made regarding the future office of the Journal. Some three years ago the office was placed at Columbus, Ohio, to suit the convenience of Editor Beal, who resided at Scio, Ohio.

Editor Eberle resides at Dallas, Texas, and this city is impossible, because of its remoteness from the center of population. The cities of New York, Philadelphia, Washington, D. C., Columbus Cincinnati, Nashville, St. Louis and Chicago have each been suggested to

the Committee on Publication, but the latter prefers that the Council itself should decide, feeling, however, that the fullest consideration should be given to the wishes of Editor Eberle.

Respectfully submitted,

J. W. ENGLAND, Chairman.

On motion of C. Osseward, seconded by Otto F. Claus, the report was received and approved and the question of the future office of the Journal was discussed and the selection of the same referred to the Editor and Committee on Publication with power to act.

The report of the Commission on Proprietary Medicines was taken up for consideration and adopted. It was directed that the report be set up at once in type and 1000 reprints be printed and the matter kept standing for an early issue of the Journal, so as to avoid delay in getting out the reprints.

On motion of F. H. Freericks, seconded by W. C. Alpers, James H. Beal was re-elected as a member of the Commission on Proprietary Medicines to succeed himself.

On motion of Dr. H. M. Whelpley, seconded by F. H. Freericks, James H. Beal was elected as Chairman of the Commission on Proprietary Medicines.

Secretary England stated that he had received a letter from Professor C. Lewis Diehl, regretting that his physical condition would not permit him to attend the San Francisco meeting and sending wishes for a very enjoyable and profitable meeting.

On motion of Dr. H. M. Whelpley, seconded by W. B. Day, the Secretary of the Council was directed to send to Professor Diehl the greetings of the Association and best wishes for recovery to health.

Adjourned until Wednesday, August 12th, at 7:30 p. m.

J. W. ENGLAND, Secretary.

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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REPRINTS.

If the request is made at the time copy is submitted, authors will be furnished reprints by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

100 copies, 4 pages, no cover, $2.50, with cover, $4.50.

200 copies, 4 pages, no cover, $3.00, with cover, $5.50.

50 copies, 8 pages, no cover, $2.75, with cover, $4.50.

100 copies, 8 pages, no cover, $3.50, with cover, $5.00.

200 copies, 8 pages, no cover, $4.50, with cover, $6.50.

50 copies, 12 or 16 pages, no cover, $4.00, with cover, $5.50.

100 copies, 12 or 16 pages, no cover, $5.00, with cover, $6.50.

200 copies, 12 or 16 pages, no cover, $6.50, with cover, $8.00.

Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

IS PARTIALITY SHOWN IN ENFORCING THE HARRISON LAW?

We recently received a letter from one of the older members of the Association, whose sincerity in abiding by all laws will not be doubted, who recites that in the city where he resides inspectors under the Harrison law found errors in keeping account of narcotics.

They were advised that by paying $25.00, no charges would be filed for violation. Rather than run the risk of prosecution, half of the druggists paid this sum, while the others did not, and were only admonished to be more careful in the future.

We are safe in assuming that our correspondent was not intentionally wrong, though there may have been technical violation of the law. The point however is the seeming partiality; if one was guilty and required to pay the fine exacted, the others were equally culpable and should have been shown no preference.

Not knowing the particulars in the case, we are not in position to speak further than that under the law there should be no partiality. Nor does the law intend for inspectors to entrap those who conscientiously seek to obey the law. Of course, being uninformed, or even mistakes, can not be plead as excuses for violation.

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WHITE SLAVERY, DRUGS AND LIQUOR

In what is very likely a syndicated article, a reverend gentleman considers the above in one class, as evidenced by the following quotation from the writing:

"The pitiless publicity of our day has revealed whole classes of men and women who seduce the unwary into sin. The entire hideous white slave traffic is made up of such. So is the drug business. So in a great degree is the liquor business."

Evidently, from the sequence and degree of expression, the latter is not as vicious as the drug business.

Possibly the writer had not anticipated a contradiction of his statements, or perhaps he did not think at all. He may have concluded from the fact that druggists do not often resent charges, that it is pleasing publicity for them. However, whatever may have been the surmise or delusion, Mr. W. H. Cousins, member of the American Pharmaceutical Association, replied to the effort

in another paper of the same Texas city, where this enlightening contribution was published in a Sunday edition. The reply seems to have had its effect, for in a number of papers, in various parts of the country, both of the North and South, explanations are attempted of what the writer "meant to say."

The, sometimes outrageous, insinuations directed against druggists as a class should be stopped. We are referring to this answer of Mr. Cousins, because of the gentlemanly but convincing manner, in which the slanderous charges were refuted, and should be helpful in persuading contributors of messages to the reading public, that druggists as a class do not desire publicity of the kind printed in the qvoted article.

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SUBSTANCES WHICH MASK THE COLOR REACTIONS OF STRYCHNINE

E. Mameli (*Rep. de Pharm.*, 1915, p. 155) has found that phenacetin, paraminophenol, phenocoll, salacetol, protocatechuic acid, arsenmomethylpyrocatechin, amylene-chloral, guaiacol, acetylguaiacol, heroin, helmitol, pyramidon, zinc phenolsulphonate, glycerin, and hydrochloric acid, are capable of affording color reactions like those given by strychnine, one of the reactions, Otto's, being the violet color obtained on contact with potassium dichromate and sulphuric acid; and the other, Mandelin's, being the blue-violet color afforded by a solution of ammonium vanadate in sulphuric acid, the color changing to rose-violet, then pink, on allowing to stand or on adding water. The author believes there are probably other substances which act likewise. The only method of avoiding error in toxicological analysis hence, is to separate the strychnine, by means of suitable solvents, in a pure condition

Obituary

SIDNEY WILLETTE.

Sidney Willette, Ph. G., died at his home in St. Louis, July, 1915, after an extended illness. Mr. Willette was in business at 4201 N. Eleventh street. He was much interested in his work and was building up a fine trade. His classmates join other friends in extending sympathy to the bereaved relatives. Mr. Willette was a member of the American Pharmaceutical Association.—Meyer Bros. Druggist.

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JULIUS KOLSCH

Julius Kolsch, one of the most prominent pharmacists of Colorado, died at Leadville, Col., on July 7, 1915, after a two years' siege of cancer of the throat.

Mr. Kolsch has been actively engaged in pharmacy since February, 1889, and had built up one of the finest retail drug stores in the West. He was a member of the Colorado State Pharmaceutical Association, and of the Masons, Elks and German order of Haurigauri.

A widow and three children survive him, Mrs. Elizabeth Kolsch, Frank A. Kolsch, with Frederick Stearns in Washington, Mrs. C. S. Gray, and Harry Kolsch, to whom the Kolsch Pharmacy in Leadville succeeds.

J. W. E.

Societies

AMERICAN CHEMICAL SOCIETY.

The Fifty-first Meeting of the American Chemical Society was held in Seattle, Washington, August 30 to September 3, 1915, inclusive. The registration showed the presence of 106 members and 119 guests.



CHAS. H. HERTY,
President American Chemical Society

The meeting was opened by an address of welcome by the Dean of the University of Washington to which response was made by President Herty. A general meeting was then called to order and listened to an address by Leo. H. Backeland on "Chemical Industry" and a second address by H. K.

Benson on "Industrial Resources and Opportunities of the Pacific Northwest." Following these addresses the Society continued in general session until noon of the following day holding public symposiums.

The Biological Division elected the following officers: Carl L. Alsberg, Chairman; I. K. Phelps, Vice-Chairman and Secretary; Executive Committee: W. D. Bancroft, Chairman; Edward Kremers, D. D. Van Slyke, A. W. Dox, A. D. Emmett.

The Division of Pharmaceutical Chemistry elected J. H. Long, Chairman; H. V. Arny, Vice-Chairman; Geo. D. Beal, Secretary; Executive Committee: F. R. Eldred and C. W. Johnson.

RESOLUTIONS

Uniformity in antinarcotic laws was recommended and for the sake of greater definiteness in definition and to avoid inevitable confusion the words *synthetic substitutes,* wherever occurring in certain of the proposed drafts, be omitted, and that the same term where used in the national or so-called Harrison Act be eliminated by proper amendments of the Sections containing it.

It is moved that this resolution be given publicity through the Journal and by publication in *Science.*

The following resolutions, presented by the Division of Pharmaceutical Chemistry, concerning the so-called "variation clause" of the Federal Food and Drugs Act, were unanimously adopted by the Council:

WHEREAS, it is being proposed to repeal the so-called "variation clause" of the Federal Food and Drug Act of June 30, 1906, and of similar clauses in State Food and Drug Enactments, thereby making the United States Pharmacopœia and National Formulary the sole and only standards for all products in every case in which a title recognized in the United States Pharmacopœia and National Formulary is used, and

WHEREAS, the United States Pharmacopœia and National Formulary comprise only standards that are limited and are properly applicable only to drug and chemical products which have been specially prepared for use in pharmacy and medicine, and hence are not satisfactory and sufficient as standards for many non-medical and non-pharmaceutical purposes, such as the many uses in the industries and arts, and

WHEREAS, the insistence upon one invariable standard which might not, under any circumstances, be departed from, requires the unwarranted assumption that such standards are incapable of further improvement and would interfere with a proper freedom of choice by physicians in the selection of medicaments and likewise with the freedom of pharmacists and chemists in the development and introduction of new and superior therapeutic products; therefore,

It is the sense of the members of the Division of Pharmaceutical Chemistry of the American Chemical Society that the variation clause is a necessary and proper part of all Federal and State Food and Drug Laws, and that the repeal of said clause would result in great and unnecessary injury to the legitimate interest of pharmacy, medicine, and industries and arts employing chemicals.

The Invitation of the University of Illinois to hold the Spring Meeting of 1916 in Urbana during Easter week was unanimously accepted. The Council voted that time and place of the Fall Meeting for 1916 be left to the President and Secretary with the understanding that as soon as the constitutional limit of one year previous to the date of the meeting had been reached, the President and Secretary would announce New York as the place of the meeting as per previous understanding that the meeting should be held in affiliation with the American Association for the Advancement of Science.

A communication from Dr. H. V. Arny, chairman of the Committee on Weights and Measures of the American Pharmaceutical Association, requesting the co-operation of a committee from the American Chemical Society in behalf of a united campaign of education toward the ultimate adoption and use of the metric system of weights and measures in this country, was presented to the Council. The Council voted that the President should appoint a committee of five to co-operate with the committee of the American Pharmaceutical Association.

W. A. Noyes was re-elected editor of the *Journal of the American Chemical Society* for 1916 and the old board of associate editors were re-elected with the addition of Dr. John Johnston. E. J. Crane was re-elected editor of *Chemical Abstracts.* M. C. Whitaker was re-elected editor of the *Journal of Industrial and Engineering Chemistry* and the same board of associate editors was re-elected with the addition of Dr. S. F. Acree.

The subject of the address of President Charles Holmes Herty was "Co-operation in Matters Chemical." He emphasized the importance of extended co-operation between schools, universities, organizations, the government, the chemists and spoke for the encouragement of the people of the United States in promoting the chemical industries.

FIRST NATIONAL EXPOSITION OF CHEMICAL INDUSTRIES.

The First National Exposition of Chemical Industries was held in New York City during the week of September 20. In the following we are abstracting from the *Scientific American.*

The remarkable advance made in the production of chemicals and dyes in the United States during the past twelve months was much in evidence. Not only chemicals and dyes, but also the many requisites of laboratory equipment, heretofore supplied almost exclusively by Germany, were prominently featured.

In a general way the exhibits were divided into three main classes: First, chemicals, ores, metals, dyes, drugs, paints and other manufactured products of similar nature; second, apparatus and equipment for chemical laboratories, and third, machinery and equipment for manufacturing chemists, the treatment of ore and other purposes.

A miniature Rittman process apparatus commanded no little attention, due to the recent introduction of this discovery which came to the rescue of American dye makers at a very critical moment. With this process, gasoline, benzol and toluol are produced.

It was stated that the British Government has recently contracted for the entire output of toluol of the leading American producer for a period of several years. The price paid by the British Government is far beyond that offered—or could possibly be offered—by dye makers. However, it is believed that others will soon be producing the chemical for home consumption.

So it will be appreciated that the exhibits of the dye manufacturers were of particular interest, displaying as they did long rows of containers filled with dyes of varied colors. The American-made chemical products also shared the keen interest of the visitors, since the commercial possibility of successfully replacing German chemicals was considered doubtful by many.

Laboratory glassware and porcelain ware now being manfactured in the United States were exhibited and it is claimed that the domestic products compare favorably with those of German manufacture, although it is admitted that the imported Jena glassware is still superior to any so far produced. Made-in-America glassware and porcelain ware were shown in abundance.

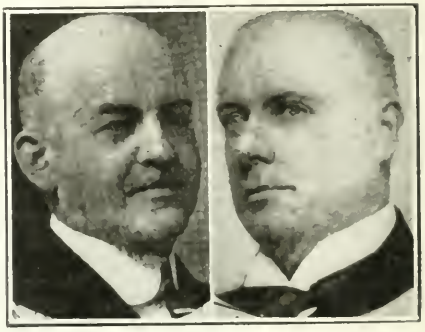
The exhibit of the Bureau of Standards was most complete, not only in presenting the apparatus used in the laboratories of the Bureau, but also the chemicals, metals and ores recently tested.

The section devoted to weights comprised exhibits of materials used or being considered for use in the construction of weights, as well as the construction of different types of weights. There was also a facsimile of one of the two prototype kilograms of platinum-iridium, which were constructed and certified by the International Bureau of Weights and Measures and allotted to the United States, being brought here by special messenger in 1890.

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NEW OFFICERS OF NATIONAL WHOLESALE DRUGGISTS ASSN.

The new officers elected by the National Wholesale Druggists' Association at the Santa Barbara meeting are: President, Charles Gibson, Albany, N. Y., succeeding Chas. A. West; First Vice President, C. F. Michaels, San Francisco, succeeding Wm. J. Mooney;



CHARLES GIBSON
Albany, N. Y.
Pres. N. W. D. A.

F. E. HOLLIDAY
New York City
Sec. N. W. D. A.

Second Vice President, Joseph H. Brown, Little Rock, Ark., succeeding John R. Tague; Third Vice President, Dr. Adolph W. Miller, Philadelphia, succeeding F. E Bogart; Fourth Vice President, C. A. Faus, Salt Lake City, succeeding John Phinizy; Fifth Vice President, H. R. Moore, Houston, Texas, succeeding John G. Mason; Board of Control: Jas. W. Morrison, Chicago, chairman; Chas. E. Bedwell, Omaha, Nebr.; Geo. R Merrell, St. Louis, Mo.; L. D. Sale, Los An-

geles, Calif.; Frank C. Groover, Jacksonville, Fla.

Owing to the increasing detail of the treasurer's office, it was decided to elect a New York trust company to take charge of this work but pending completion of arrangements, the present Treasurer, S. E. Strong, Cleveland, Ohio, will be asked to continue in office. Resolutions of thanks to Mr. Strong for his long and valuable services to the association were adopted.

Francis E. Holliday was appointed secretary and Evans E. A. Stone, assistant secretary.

Baltimore was chosen as the next place of meeting.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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NEW YORK.

President J. Leon Lascoff called a special meeting of the New York Branch, A. Ph. A., for September 20, for the purpose of taking suitable action on the demise of the late President, John Roemer. A sketch of the life of the deceased appeared in the September issue of the JOURNAL.

The services were largely attended. Among the speakers were Dr. George Diekman, J. Leon Lascoff, James M. McCullough, of the Westchester County Pharmaceutical Association, and Dr. Henry T. Kelly, of the Westchester County Medical Association.

The principal address of the evening was made by Dr. H. T. Kelly, who said in part:

"The distinguishing characteristics of the man were his comprehensive knowledge, his broad view, his retentive memory, his dignified independence, and his kindness of heart. He endeared himself to men in every walk of life, and his death is mourned as a friend and benefactor in many a home in the community in which he lived. His ceaseless industry and brilliant talents plainly indicate the power of his brain and evidence the fact that his knowledge was varied and extensive. There was embodied in his person a combination of rich intellectual gifts rarely to be found in one individual. * * *

"His life was one of continuous toil, and his pleasures were wholly centered in his profession. Several evenings each week a little group of physicians would listen to him inculcate principles founded upon his own original observations, and hear the deductions from his inexhaustible store of pharmaceutical, scientific and philosophical knowledge. The impromptu forum which he conducted in the rear room of his pharmacy will always be one of the most hallowed recollections of my life. It was here that we learned materia medica. Infinitely more and better materia medica than was ever taught at college. There was an earnestness in his conversation, which seemed to carry the weight of conviction with it, and produced an indelible impression upon the memory. All the pharmacists and physicians who came within his sphere of influence benefited by his teachings. * * *

"In a character so complex and diversified, one may be asked what was the dominant feature, what was the supreme quality, the one characteristic which stamped its impress upon the nature of the man. If I were to characterize his dominant moral and mental trait, I would say it was his love of truth. This, with his intense humanity and high sense of honor seemed to be the qualities which stimulated his mind, his heart, his soul, his whole life, with an energy and devotion which death alone could nullify."

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DETROIT

The Detroit Branch of the American Pharmaceutical Association met Friday evening, Sept. 17th, at the Wayne County Medical Society Building.

The meeting was called to order by President W. L. Scoville. The following gentlemen were appointed to the Membership Committee: F. F. Ingram, Jr., Chairman; E. R. Jones, C. A. Weaver, D. E. Perrin, Grant Stevens.

Mr. W. A. Hall gave a short talk on a method for estimating quickly the amount per dram of any drug in an N. F. or U. S. P. formula, the volume of which is one litre. The scheme is, add one seventh to the amount of the ingredients and divide by twenty.

The paper of the evening was by Mr. W. L. Scoville on Formaldehyzed Capsules. Mr.

Scoville has carried out a series of experiments on this subject over a period of several years. The capsules were treated with solutions of Formaldehyde of various strengths and then placed in acid and alkaline solutions similar to those of the stomach and intestine. The correct procedure for making enteric capsules was shown by this excellent paper.

Much discussion followed, every member present taking an active part.

Mr. Scoville also gave a very interesting description of the Meeting and the Fair at San Francisco.

A. A. WHEELER, Secretary.

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PHILADELPHIA.

The first of the 1915-16 winter meetings of the Philadelphia Branch was held Tuesday, September 21st, at the Medico-Chirurgical College.

The meeting was called to order at 8:30 by President S. C. Henry.

A communication from the New York Branch with an account of the death of their president, Mr. John Roemer, was read. A motion was read and carried that the secretary convey to the New York Branch our feeling of regret at the loss of such an able man.

Mr. Louis Gershenfeld was proposed and voted to be a member of our branch.

The program of the evening was then taken up.

Mr. Jos. W. England gave a report of the San Francisco meeting of the A. Ph. A. Mr. S. C. Henry reported the N. A. R. D. convention and, in the absence of Mr. Fischelis, Prof. C. H. LaWall gave an interesting account of the convention of the Pennsylvania Pharmaceutical Association.

J. ED. BREWER,
Secretary.

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TO BE USED TOGETHER.

A druggist lately received a hurried call from a small girl, who desired to purchase liniment and some cement.

"Liniment and cement?" repeated the pharmacist, puzzled by the unique order. "Going to use 'em at the same time?"

"Yes," promptly responded the youngster. "Ma she hit pa with a pitcher."—Chicago Ledger.

The Pharmacist and the Law

LEGISLATIVE AND LEGAL MATTER FROM THE REPORT OF THE COMMITTEE ON TRADE INTERESTS OF PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

BY B. E. PRITCHARD, CHAIRMAN.

Mr. John C. Gallagher presented a paper before the New Jersey Association last year a portion of which is worthy of consideration in this report. Mr. Gallagher said:

"Recently there was a trial of a druggist in which one of the charges was that he had not labelled a poison with his name and address. The lawyer for the defendant tried to show by witnesses that it was the custom of the trade not to label with the name and address of the retail druggist, trade or original packages whose contents are poison upon which the name and address of the manufacturer appears together with the word poison. The judge refused to admit the testimony along that line for the reason, as he explained, "that customs are very often illegal and in this case contrary to the text of the law." It will be noted that this case was based upon a sale of a ready for sale package obtained from the manufacturing pharmaceutical house, such, for instance, as morphine and the various tablets and bichloride discs, etc. The poison law of Pennsylvania reads in part, as follows: "No person shall sell at retail any poisons except as herein provided, without affixing to the bottle, box, vessel, or package containing the same a label, printed or plainly written containing the name of the article, the word 'poison' *and the name and place of business of the seller.* Thus while the incident related took place in another state, yet it is applicable alike to a similar transaction in this state.

At the September, 1914, meeting of the Pennsylvania Pharmaceutical Examining Board the condition was revealed through the reports of its investigators that cotton seed oil is frequently sold throughout the state upon calls for sweet oil, and the board directed attention of all dealers in this product to such labelling as being unlawful, and in violation of the Federal Food and Drugs Act

of 1906. Sweet Oil is the fixed oil expressed from the ripe fruit of the Olive tree and the only article which can be sold under that name without subjecting the seller to a charge of misbranding.

In this connection it seems wise to mention the presence in the market of a product labelled "White Wax No. 2," and the Pharmacy Board's investigators have reported a number of instances where it was delivered upon calls for white wax and so labelled. Analysis shows that white wax No. 2 is composed of 70 percent paraffin and 30 percent white wax. As it is labelled for what it is when sold by the jobber to pass it along by the retailer without similar precaution makes the latter liable without recourse. The presence of this adulterated wax in cold cream and ointment of rose water is likewise liable to make trouble for the seller.

Again, and following the same line of cautioning the retailer, Dr. Louis Emanuel, President of the State Pharmacy Board, presented a paper before the Pittsburgh Branch of the American Pharmaceutical Association in December in which he dealt with the action of the U. S. P. Revision Committee in retaining benzoinated lard as a base for zinc oxide ointment, and the opposition to the recommendation upon the part of numerous pharmacists because of its proneness to become rancid, which is not the case when petroleum is used. Dr. Emanuel called attention to the wide use of the petroleum base and warned the pharmacists of the State that its continued use may lead to prosecution under the Federal Food and Drugs Act as well as under the drug laws of a number of states of which Pennsylvania is one.

While dwelling upon the subject of the drug laws it becomes pertinent to mention the case in which a druggist in Fayette County was cited to answer a charge made by the pharmacy board against him, involving the sale of drugs that were not in accordance with U. S. P. requirements. In ruling upon this charge Judge Umbel declared that section three of the Pennsylvania drugs act is unconstitutional and dismissed the case on that ground. Section three reads in part: "For the purpose of this act an article shall be deemed to be adulterated, 1st., if a drug is sold under or by any name recognized by the U. S. Pharmacopœia, etc.....if it differs from the standard of strength, quality or purity as determined by the test or formula laid down "in the text books named in the act." "2nd. If its strength or purity falls below the professed standard under which it is sold." Judge Umbel declared that to make this act constitutional the text of the several books named should form a part of the act. The pharmacy board, of course, promptly appealed from this decision. While not exactly bearing upon this case, yet it may be interesting to mention that this judge has since resigned under pressure and at the solicitation of the governor for certain acts unbecoming a judge on the bench.

As your committee is dealing with occurrences in a free-handed manner it may not be out of place to relate a rather humorous yet somewhat gruesome incident that was chronicled in a daily paper recently in which the denseness of some clerks—and it is not always the clerk alone—is made manifest. This item read:

"Robert Hoffman of Spring Alley was taken to St. Francis hospital yesterday, suffering from the effects of wood alcohol, taken, it is said with suicidal intent. Hoffman had asked the clerk in a drug store for carbolic acid. The clerk gave him wood alcohol, suspecting his purpose. Said clerk was lauded in this item for his sagacity in heading off a would be suicide. Wonder if that smart clerk ever read in his dispensatory that 'The treatment of Methyl Alcohol poisoning is very unsatisfactory.'"

The doctrine of Price Protection has during the past year been more persistently than ever before kept to the front through the activity of an organization known as the American Fair Trade League, the objects of which are:

1—To aid in the re-establishment and continuance of fair competitive commercial conditions.

2—To promote honesty in manufacturing, in advertising and in merchandising, for the mutual interest of the consumer, the middleman and the manufacturer.

3—To bring to the public attention the existing evils in merchandising methods which operate to the injury of society.

4—To act as a clearing house of information concerning trade practices and systems and legislation relating thereto.

5—To aid in securing the enactment and enforcement of laws, state and national, that will,—Prohibit and penalize unfair competi-

tion; Prohibit and penalize dishonest advertising; Prevent the elimination of the smaller business man by unfair methods.

6—And to secure to the public the benefits and protection of stable, uniform retail prices upon all trade-marked and branded goods.

The League has been liberal in sending out literature broadcast for the purpose of arousing interest in securing the passage of the so called Stevens Bill, a measure that has for its object the legalizing of price protection from manufacturer to consumer.

Dr. Frank Crane, the noted writer says:

"There are two ways of selling goods, the oriental or primitive way, is by haggling, and the modern way, which is by one price to all. The old way is suited to provincial life, to bazaars and small push carts, it never in the world could have produced big business because it is incapable of organization. The maker of a standard, trade-marked article ought to have the right to say how much the retailer should ask the public for it. The Supreme Court, by an amazing decision has said that it has not that right. The government compels railroads to maintain one price to all, why prevent the manufacturer from doing the same thing? The public has an erroneous idea that price agreement is a conspiracy against the consumer. Exactly the contrary is true. Price chaos evidently injures the consumer, and meanwhile puts the honest manufacturer out of business. The business of the United States ought to be on a sound basis. There is none other such than one price to all." In this connection I would like to present the manufacturer's view on the subject of price protection by quoting from a letter recently received from the managers of a nationally advertised toilet specialty, which comes direct from first hand:

"When the vicious price-cutter hammers the margin down to nothing, we cannot get volume of business, because the dealer simply cannot afford to carry our line. The price cutter as we generally find him selling for less than he has to pay for it, is not only guilty of unfair competition, but he is guilty of a form of theft of our good will and property values in our trade-marks which some of the enlightened courts of the country have already recognized. I venture the assertion that within five years the Supreme Court will hold the manufacturer entitled to punitive damages against the dealer who infringes his good will value by this form of cutting."

During the current year there has been a renewed energy shown by the promoters of something for nothing schemes in endeavoring to fasten their demoralizing methods upon the retailers of the country, and our own State seems to have been specially seized upon by these brigands upon honest tradesmen as a ripe field for their nefarious game.

A bill was introduced in the last session of the legislature intended to place such a tax upon the promoting of and use of these deceptive schemes as would at least cripple them, the preamble to which read:

"Realizing that the sale or so-called giving of trading stamps, gift coupons, etc., is one of the principal causes of the high cost of living, as the consumer always pays for same and that the practice is a menace to the honest retail merchant, benefiting no one but the trading stamp companies, whom it enriches at the expense of the general public, We therefore pray that your Honorable Bodies—The House and Senate of the State of Pennsylvania assembled, enact the attached bill."

In common with other organized trade bodies the retail drug organizations of the state urged vehemently the passage of the bill —but it was buried in committee—through the usual method.

With reference to the above methods of securing trade the following analysis of how such schemes work out, taken from the May issue of the Western Pennsylvania Retail Druggist, may prove useful in deterring some retail druggists who do not think deeply from rushing into some of these deluding schemes:

QUI BONO?

Looking at the matter from a strictly business getting angle, of what use are the various alleged profitsharing schemes to the retail druggist? Even the most extravagant promoter will not assert that his method will add more than 25% to your present sales. Now figure it out for yourself. At the best your net earnings are not over 10%.

If your volume of sales is $10,000 the increase promised will be $2,500, which, even though it materializes, which is questionable, as your competitors are not asleep while you are working the game, it will only mean a net gain to you of $250.00. The cost to you for the use of the system is usually 2½ percent, which based on sales of $12,500 would mean that for the privilege of earning an additional $250.00 you pay out $312.50 in

cash, while throwing in the time and labor involved in taking care of the $2,500.00 increase as a bonus. Great scheme, what?

The emergency Stamp Tax Act passed at the last session of Congress and approved by the President October 22nd, is, or rather was until the Internal Revenue Commissioner and the Treasury Department began to grind out regulations, a measure filled with problems of a most complex character. It is the consensus of opinion that it is a piece of legislation that was entirely uncalled for, and only carried out as one more way out of the woods for the administration to cover up the damage done by the latest Tariff law. Analysis of its text shows it to have been most loosely and carelessly drawn, and reference to the various rulings issued by the Internal Revenue Department, taken in connection with the Act in its wording, shows many inconsistencies and incongruities and downright absurdities. We refer more particularly to that portion known as Section B—which carries that portion of the Act which bears particularly upon the drug trade.

One peculiar feature in connection with this Act of Congress is the fact that it became effective in detachments; that section bearing upon wines, liquors and cordials going into immediate effect, October 23rd: that section bearing upon tobacco and cigars taking effect on November 1st; while Section B—in which toilet preparations, etc., are included did not become effective until December 1st.

As originally drafted Section B included in its provisions proprietary or so-called patent medicines, but the earnest protests from the retail druggists of the country that fell upon Congress like an avalanche was irresistible, and at the last minute caused the elimination of that feature, and that fact has been largely responsible for the many problems that have been troubling both the department officials and the retailers ever since the law became effective. It is said that there never has been a law enacted by Congress—except the Harrison Narcotic Law—that has so taxed the powers of the Internal Revenue Department to make plain. The department has been literally overwhelmed with the flood of inquiries for information. These came in such numbers that in many instances the officials in their replies and regulations unwittingly reversed themselves, which has led to much confusion. The law expires automatically December 31, 1915.

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COMPULSORY REGISTRATION OF PROPRIETARY MEDICINES IN NEW YORK CITY.

The New York City Board of Health has formulated regulations, compelling the registration of the names of the ingredients of proprietary and patent medicines as a prerequisite for offering these preparations for sale in New York City.

The Department supplies official application blanks which must be signed by the applicant; these demand information as follows:

1. Name of preparation.

2. Name of applicant (specifying whether manufacturer, proprietor, importer, or distributor).

3. Location of manufacturer.

4. Form in which preparation is marketed.

5. Therapeutic effects claimed for preparation.

6. Names in English (not quantities) of ingredients to which the therapeutic effects claimed are attributed, and the names in English (not quantities) of all other ingredients except such as are physiologically inactive.

7. Exact text of all advertising matter and every statement set forth upon or contained in package, box, bottle or container as sold, and of the advertising matter relating to the said preparation contained in any circular, leaflet or book sold or distributed with or in conjunction with such preparation.

A sample of the preparation in the form in which it is to be sold or offered for sale in the City of New York, including the package, wrapper, label, box, bottle, container, and all advertising matter and statements shall be submitted with the application. Subsequent changes in form or text of labels, advertising matter or statements shall be filed with the Department of Health and shall be approved before use.

When such application is properly filled out and signed, together with the required sample of the preparation, shall have been filed with the Department of Health and the ap-

proval thereof given by the director of the Bureau of Food and Drugs and the sanitary superintendent, a certificate of registration shall be issued specifying the name of the preparation, the name of the person registering such preparation and the date. Every such registration certificate shall be numbered, which said number shall identify the particular preparation so registered and shall thereafter be affixed to the package containing such preparation.

Where the place of business of any person, firm or corporation filing an application under Section 117 of the sanitary code is elsewhere than in the City of New York such applicant shall furnish at the time of filing such application with the Department of Health, the name of a person, firm or corporation resident in or having a place of business in the City of New York, as the agent or representative of such applicant. Any notice to or dealings with such agent or representative shall be as effective as if sent to or made with such applicant.

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WRONGFUL USE OF NAME.

In a suit for injunction by Thomas A. Edison, the well-known inventor, it was sought to restrain the defendant from using the complainant's name and picture, and a certificate over his name, alleged to have been authorized by him, on the bottles and cartons containing a medical compound. It appeared that in 1879 the complainant discovered or invented a preparation which he thought would be useful as a neuralgia remedy and applied for a patent on it. While the application was pending, he sold his rights to three persons. For some reason the patent application was abandoned, at the instance, it was said, of Mr. Edison. The defendant said that Mr. Edison verbally agreed that, if the patent application was not prosecuted to issue, that the product might be marketed under his name, with his picture upon the wrapper or cartons of the bottle in which the mixture was offered for sale, and that a certificate reading, "I certify that this compound is made according to the formula devised by myself," appear on each bottle or its wrapper. The assignees of the rights formed a New Jersey corporation to exploit the remedy. The company was not a success and the rights passed through several hands before they were assigned to the defendant, in the course of which time Mr. Edison, in 1907, obtained, in the New Jersey courts, an injunction against the use of his name in connection with the alleged remedy. In 1912, the defendant proposed to market the compound under the name of Edison's Polyform with a certificate and trade-mark. Mr. Edison, on being informed of this, denied the existence of any right to the term "Edison's Polyform," and stated that he would not permit the use of his name in connection with Polyform, or recommend the formula, and he was willing to litigate the question to any extent. Notwithstanding this warning the defendant proceeded to market the formula in cartons which reproduced the old picture and the alleged certificate. Mr. Edison promptly instituted suit in the New York courts.

It was held that unless Edison made the verbal contract alleged in the defendant's answer, the latter had not on any theory a shadow of right to do what it did, nor had it unless some title remained in the persons to whom he had assigned his rights. The court expressed its disbelief that any such contract as was alleged was ever made. Moreover, it held that such a contract as was alleged was absolutely personal to the three persons to whom Edison had assigned his rights, and was therefore not assignable. "The remedy," the court said, "is admittedly a compound of a number of dangerous drugs. A. may be willing to allow his name to be used for promoting the sale of such an article, provided it is manufactured and put on the market by some one in whom he has confidence. An agreement by him that B. may use his name for such a purpose does not imply any grant to the latter of the right to authorize some one utterly unknown to A. to do the same thing. Complainant is entitled to a decree enjoining the defendant from calling the compound by his name, and by any name of which his forms a part, and from putting his picture or any certificate purporting to come from him on any of its packages or in any of its advertising literature, or from in any wise holding out or suggesting that he is in any wise concerned or interested in the sale. A witness whose testimony defendant itself introduced says that the remedy is worth-

less, except for the value that the right to use complainant's world-wide reputation in advertising may give to it. Complainant no longer believes that the remedy is useful, or likely to accomplish the purposes for which it was intended. There is not sufficient evidence in the case that that which defendant is putting out is really compounded according to the original formula. If it is using that formula, it doubtless may have a right to say so. In view of the improper use it has already attempted to make of the complainant's name, it should not be allowed even to say that much, or say he was the inventor, unless that statement is accompanied with the further explanation that the complainant now thinks it is without merit. Such latter statement must in every case appear in immediate connection with the formula and be as conspicuously displayed."

Edison v. Continental Chemical Co., 220 Fed. 398.

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IN A SAFE PLACE.

In some of the small town drug stores in the quarry districts of Indiana, you can buy anything from talcum powder to dynamite, says the Indianapolis News. Not long ago, a small quarry operator drove up to one of these stores. The man was in a buggy, and his wife was with him. Calling to the proprietor of the store, he said, "Jim, bring out that box I bought a while ago!"

The package was put into the buggy at the feet of the man and his wife. The latter eyed the box suspiciously.

"What's in that package?" she asked with some asperity.

"Now, never mind," said the husband; "that's not going to hurt you."

The evasion excited the wife's further suspicion. "Ed Spivens," she exclaimed, "that's a box of dynamite!"

"Well, what if it is?" said Ed. emphatically. "It won't do any damage unless it explodes."

"Ed Spivens," shrilled the woman, "if you think I'm going to ride six miles in a buggy with fifty pounds of dynamite at my feet you're a bigger fool than I thought you were! You have that man take that stuff right out and put it in the back part of the buggy, under the seat!"

Council Business

COUNCIL LETTER NO. 1.

PHILADELPHIA, PA., September 10, 1915.

To the Members of the Council:

At the San Francisco (1915) meeting of the Association, it was decided that Professor C. Lewis Diehl be retained as titular Chairman of the Committee on National Formulary, but that there be created, by resolution, the position of Vice Chairman of the Committee, and that this official be given full authority to act as the chairman or acting chairman, until further change; Professor Wilbur L. Scoville was elected the Vice Chairman of the Committee on National Formulary.

The subject matter of the National Formulary, Fourth Edition, is in the hands of the printer and proof is being rapidly furnished to the members of the committee, but there are certain questions of detail that have not yet been determined.

Vice Chairman Scoville writes asking the Council to authorize the holding of a conference of the editing committee and near-by members of the Committee on National Formulary, at Philadelphia, during September or October, of this year, at the call of the vice-chairman of the committee, and that the traveling and other expenses of the members be paid at a total cost not exceeding one hundred dollars.

The members of the editing committee are Messrs. Scoville, Cook, Dunning and Beringer.

The vice chairman of the committee will consult personally, also, Messrs. Hall, Seltzer and Stevens of Detroit, LaWall of Philadelphia, and Arny and Raubenheimer of New York, so that more than one-half of the membership of the Committee on National Formulary can be consulted at a comparatively small expense to the Association; such conference will clarify the final details and facilitate the more rapid publication of the book.

Motion No. 1 (*Conference of Committee on National Formulary*). Moved by G. M. Beringer, seconded by C. H. LaWall, that a conference of the members of the editing

committee and near-by members of the Committee on National Formulary be authorized to be held at Philadelphia during September or October of this year, and that a sum not exceeding one hundred dollars be appropriated to pay the expenses of holding such conference.

Motion No. 2 (Election of Members). You are requested to vote on the following applications for membership:

No. 1. Leonard R. Wagner, Bangor, Mich., rec. by W. B. Day and J. W. England.

No 2. Fred Bailey, 175 Main St., Berlin, N. H., rec. by E. H. Lyford and Wm. B. Day.

No. 3. Sylvia C. Alacan, 4528 Chestnut St., Philadelphia, Pa., rec. by Jose P. Alacan and Jose Guillermo Diaz.

No. 4. David M. Olmstead, 126 Plymouth Ave., S., Rochester, N. Y., rec. by Eugene L. Maines and H. W. Gardner.

No. 5. Charles T. A. Witt, 195 Exchange St., Rochester, N. Y., rec. by E. L. Maines and William B. Day.

The following is a list of the members of the Council for 1915-16:

MEMBERS OF THE COUNCIL.

Alpers, Wm., 14th St. and Central Ave., Cleveland, O.

Apple, Franklin M., 31st and Berks St., Philadelphia, Pa.

Arny, H. V., 115 W. 68th St., New York, N. Y.

Beringer, George M., 5th and Federal Sts., Camden, N. J.

Brown, Linwood A., 425 Transylvania Park, Lexington, Ky.

Caspari, Charles, Jr., University of Maryland, Baltimore, Md.

Caspari, Charles E., 2108 Locust St., St. Louis, Mo.

Clans, Otto F., 3513 Hebert St., St. Louis, Mo.

Day, William B., 71 E. 12th St., Chicago, Ill.

Eberle, Eugene G., P. O. Box 1539 Dallas, Tex.

England, Joseph W., 115 N. 33rd St., Philadelphia, Pa.

Fennel, C. T. P., 611 W. Court St., Cincinnati, O.

Freericks, Frank H., 1215 Mercantile Library Bldg., Cincinnati, O.

Godbold, Fabius C., 5601 Rosemary Place, New Orleans, La.

Godding, J. G., 278 Dartmouth St., Boston, Mass.

Hall, W. A., 200 Griswold St., Detroit, Mich.

Hensel, Samuel T., 351 Mercantile Bldg., Denver, Col.

Hilton, S. L., 1033 22nd St., N. W., Washington, D. C.

Holzhauer, Charles, 53 Spruce St., Newark, N. J.

Hopp, Lewis C., 1104 Euclid Ave., Cleveland, O.

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Koch, J. A., Pittsburgh College of Pharmacy, Pittsburgh, Pa.

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Rogers, Charles H., West Virginia University, Morgantown, W. Va.

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Schneider, Albert, 723 Pacific Bldg., San Francisco, Cal.

Scoville, Wilbur L., 81 Melbourne Ave., Detroit, Mich.

Snow, Clyde M., 71 E. 12th St., Chicago, Ill.

Stewart, Francis R., 11 W. Phil-Ellena St., Philadelphia, Pa.

Weinstein, Joseph, 1771 Madison Ave., New York, N. Y.

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White, William R., 311 Grace St., Nashville, Tenn.

Wilkerson, J. A., 2036 Russell St., St. Louis, Mo.

Wilbert, M. I., 1621 35th St., N. W., Washington, D. C.

Wulling, F. J., University of Minnesota, Minneapolis, Minn.

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J. W. ENGLAND,
Secretary of the Council.
415 N. 33rd St., Philadelphia, Pa.

UNITED STATES PUBLIC HEALTH SERVICE.

Partial list of changes of duties and stations of commissioned and other officers of the United States Public Health Service:

Pharmacist E. J. Thurston. Relieved from marine hospital, Evansville, Ind., and proceed to the marine hospital at Vineyard Haven, Mass. July 24, 1915.

Pharmacist E. B. Scott. Granted three days' leave of absence from July 19, 1915. July 17, 1915.

Pharmacist R. F. Troxler. Detailed to represent the service at the annual convention of the American Pharmaceutical Association, San Francisco, Calif., August 9-13, 1915. July 24, 1915.

Pharmacist W. H. Keen. Relieved from duty at Washington, D. C., and from special temporary duty at New Orleans, La., effective August 1, 1915, and directed to proceed to the marine hospital, Evansville, Ind. July 24, 1915.

Pharmacist J. Y. Breckenridge, Jr. Directed to return to station at Boston, Mass. July 24, 1915.

Pharmacist Ralph E. Knouse. Directed to report to the chairman of a board of commissioned medical officers at the marine hospital office, Galveston, Texas, July 26, 1915, for examination to determine his fitness for promotion to the grade of pharmacist of the second class. July 15, 1915.

Pharmacist Claude H. Parker. Directed to report to the chairman of a board of commissioned medical officers at the marine hospital, St. Louis, Mo., July 26, 1915, for examination to determine his fitness for promotion to the grade of pharmacist of the second class. July 15, 1915.

List of changes of station for the period ending August 31, 1915, in the cases of sergeants first class, and sergeants, hospital corps:

SERGEANTS FIRST CLASS.

Samuel H. Leopold, from Ft. H. G. Wright, to Ft. Rosecrans.

Charles G. Manning, from Ft. Bayard, to Ft. George Wright.

Christopher Hermann, from the Presidio of Monterey, to Jefferson Barracks.

Francis W. Wickett, from Jefferson Barracks, to the Presidio of Monterey.

Edward D. Sykes, from the Hawaiian Department, to Ft. Flagler.

Robert A. Dickson, from the Philippines Department, to Ft. Riley.

George C. Douglass, from the Philippines Department, to Ft. Barry.

Daniel C. Donovan, from Ambulance Co. No. 6, to Ft. Niagara.

Hugh R. MacCleery, from Field Hospital Co. No. 6, to Ft. Sam Houston.

Charles T. Loebenstein, from Ft. Screven, to the Canal Zone.

SERGEANTS.

Arthur A. White, from Field Hospital Co. No. 3, to Ft. Ontario.

Erwin Duntley, from Ft. Ontario, to Field Hospital Co. No. 3.

Frank A. Dagit, from West Point, to the Philippines Department.

John A. Strauch, from Douglas, Ariz., to Vancouver Barracks.

James A. Tremblay, from Ft. Niagara, to Ft. Ethan Allen.

Rex M. Davenport, from Ft. Jay to Ft. Oglethorpe.

Charles N. Abel, from Ft. DuPont, to Ft. Oglethorpe.

John S. Kelly, from the Hawaiian Department, to the U. S., on furlough.

Isidore I. Gershberg, from the Hawaiian Department, to the U. S., for discharge.

Harold Both, from the Philippines Department, to the Letterman General Hospital.

Hugo E. Lacher, from the Hawaiian Department, to the U. S., on furlough.

Thomas E. Bussey, from Ambulance Company No. 3, to Ft. Sam Houston.

Vernon F. Dotson, from the Philippines Department, to Letterman General Hospital.

Virgil L. Miller, from the Philippines Department, to the Eastern Department.

Barney A. Raczunas, from the Philippines Department, to the Eastern Department.

George A. Pippy, from the Philippines Department, to the Eastern Department.

Harry L. Woodard, from Ft. Hancock, to the Hawaiian Department.

Robert Murphy, from Ft. Barrancas, to the Hawaiian Department.

Patrick J. Skelly, from Plattsburg Barracks, to the Hawaiian Department.

Amory C. Cotchett, from Ft. McDowell, to the Hawaiian Department.

Francis E. Lynch, from Ft. Jay, to the Department Surgeons' Office, Eastern Department.

Neil M. Stewart, from Ft. H. G. Wright, to the Cantonment Hospital, Galveston..

Albert O. Miller, from Ft. Strong, to Ft. Williams.

Richard J. Howland, from Ft. Williams, to Ft. Strong.

Harry Brotherton, from Ft. Greble, to the Second Division.

John C. Gray, from the Second Division, to the Eastern Department.

Clarence E. Hoverter, from Ft. Douglas (Colorado Militia duty), to Ft. Jay.

Olaf C. Larsen, from Ft. H. G. Wright, to Ft. Niagara.

PHARMACIST

E. B. Scott, re-detailed for duty in the Bureau, effective August 31, 1915.

PROMOTIONS

Pharmacists R. E. Knouse and Clyde Ritter promoted to Pharmacists of the Second Class.

<>

TWO DOCTORS.

Two Manhattan physicians were enjoying the breeze from the front seat on the "hurricane deck" of a Riverside Drive bus one bright afternoon recently, when part of their conversation was overheard. It ran like this:

"I performed an operation for appendicitis on the wife of a millionaire yesterday," said the stouter of the pair.

"Yes?" said the other. "What was she suffering from?"—Boston Advertiser.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
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Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

CHANGES OF ADDRESS SINCE AUGUST 18, 1915.

W. D. BOST,
From 340 Eddy St., San Francisco, Cal.
To Residence unknown.

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From Craig, Colo.
To Residence unknown.

J. N. PATTERSON,
From 488 Geary St., San Francisco, Cal.
To Residence unknown.

F. G. SCHACHLEITER,
From 717 Central Ave., Hot Springs, Ark.
To Residence unknown.

C. J. KOERBER,
From Byberry Road, Torresdale, Pa.
To Care Gerhard's Pharmacy, Tacony, Philadelphia, Pa.

CARL STIER,
From Care Gulf Quarantine Station, Biloxi, Miss.
To U. S. Quarantine Station, Boston, Mass.

W. E. FENDER,
From Ft. Adams, R. I.
To Residence unknown.

ERNEST N. DYER,
From Residence unknown.
To 981a Tremont St., Boston, Mass., (former address).

JOHN VARGA,
From 2017 W. 25th St., Cleveland, Ohio.
To 1299 2d Ave., New York, N. Y.

WM. L. B. BRITTAIN,
From 4408 Carter St., Norwood, Ohio.
To 1911 Williams Ave., Norwood, Ohio.

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J. U. LLOYD, Cincinnati, Ohio

Thirty-Fifth President of the American Pharmaceutical Association



J. U. LLOYD

The Journal of the American Pharmaceutical Association

Volume IV NOVEMBER, 1915 No. 11

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Papers and communications for insertion in the JOURNAL should be sent to the Editor, E. G. Eberle, 63 Clinton Bldg., Columbus, Ohio. Subscriptions should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

Thanksgiving Proclamation

President Wilson, naming Thursday, November 25, as the date, has issued the following Thanksgiving proclamation:

It has long been the honored custom of our people to turn in the fruitful autumn of the year in praise and thanksgiving to Almighty God for his many blessings and mercies to us as a Nation. The year that is now drawing to a close since we last observed our day of national thanksgiving has been, while a year of discipline because of the mighty forces of war and of changes which have disturbed the world, also a year of special blessings for us.

Another year of peace has been vouchsafed; another year in which not only to take thought of our duty to ourselves and to mankind; but also to adjust ourselves to the many responsibilities thrust upon us by a war which has involved almost the whole of Europe.

We have been able to assert our rights and the rights of mankind without breach of friendship with the great nations with whom we have had to deal, and while we have asserted rights, we have been able also to perform duties and exercise privileges of succor and helpfulness which should serve to demonstrate our desire to make the offices of friendship the means of truly disinterested and unselfish service. Our ability to serve all who could avail themselves of our services in the midst of crises has been increased by a gracious Providence by more and more abundant crops; our ample financial resources have enabled us to study the markets of the world and facilitate necessary movements of commerce which the war might have otherwise rendered impossible, and our people have come more and more to a sober realization of the part they have been called upon to play in a time when all the world is shaken by unparalleled distresses and disasters.

The extraordinary circumstances of such a time have done much to quicken our national consciousness and deepen and confirm our confidence in the principles of peace and freedom by which we have always sought to be guided. Out of darkness and perplexity have come firmer counsels of politics and clearer perception of the essential welfare of the Nation. We have prospered while other people were at war, but our prosperity has been vouchsafed us, we believe, only that we might the better perform the functions which war rendered it impossible for them to perform.

Now, therefore, I, Woodrow Wilson, President of the United States of America, do hereby designate Thursday, the twenty-fifth of November next, as a day of thanksgiving and prayer, and invite the people throughout the land to cease from their wonted occupations and in their several homes and places of worship render thanks to Almighty God.

Scientific Section

Papers Presented at the Sixty-Third Annual Convention

MINUTES OF THE SECOND SESSION

(Minutes of the first session in September number, pp. 1120-1130.)

The second session of the Scientific Section was held August 11, 1915, at 2 p. m. The session was called to order by Chairman Engelhardt, Dr. J. A. Koch acting as Secretary.

Upon motion, the reading of the minutes of the first session was dispensed with.

The report of the Committee on Quality of Medicinal Products was read by title and distributed in pamphlet form.

A telegram from Mr. B. L. Murray, Chairman of the Committee on Ebert Prize announcing that the Committee had awarded the Ebert Prize to Mr. E. N. Gathercoal for his paper on "The Pharmacognosy of the Medicinal Rhamnus Bark," was received and approved.

Chairman Engelhardt: The first number on the program will be a paper by Dr. A. R. L. Dohme on "the Coöperation of Science and Industry."[1]

DISCUSSION OF DR. DOHME'S PAPER.

The Author: As you see, I have some practical suggestions which seemed to my mind to be the best possible means of approaching this proposition. I do not know whether you have studied it to any extent, or whether you have participated in or followed to any extent the work of the Chamber of Commerce of the United States. But, really, it is so far ahead of any other institution of the country, and the results that it is actually producing are so far-reaching, that I feel that it should be forcefully presented to you; and I might say that during the last year it has practically molded so far as that is possible, the opinion of Congress on such things as the shipping bills, and many other problems confronting it. And as a man who is actually in touch with this work every day, I can tell you that as a result of its work and methods it is in touch today with practically every Chamber of Commerce in the United States, of every city of any size or of any manufacturing center of any size, national associations, and the leading manufacturers of cities, and governors of states; and it has had occasion to put out referenda during the past six or eight months on practically all or at least many of the large questions confronting this country, and I might say that they are really marvels in the way of compilations; are marvels of analysis, and are marvels of work, and they are accomplishing the results.

Senators at Washington and legislators, as I have often had occasion to observe, heed and pay attention to what this body says, and what its men utter and suggest; and while it is only a beginning, while the institution is a young one, its membership is growing, I might say at a stupendous rate, and I think it gives promise, in fact, I am almost sure that it will succeed in the next year, in practically taking from politics the tariff question I am myself convinced that by its means the tariff will be eliminated hereafter as a political proposition.

They (the United States Chamber of Commerce) are getting the consensus of opinion of all our great economists, all the prominent individuals connected with chambers of commerce, and therefore connected with the Chamber of Commerce of the United States, of all

[1] The paper was printed in the September issue of the Journal, page 1105.

our boards of trade, of all our large manufacturers, of all associations, wholesale and retail, and that consensus of opinion and information derived therefrom, is being compiled, and when it is presented to Congress on this question there is no doubt but what it will go before Congress as representing the views of the people of the country, practically representing eighty percent of those people.

Now, in the opinion of many of the foremost men of this country, such as the great constructive bankers, large manufacturers, and many of our great statesmen, it is and does represent a most wonderful organization, in fact, has their unqualified support, and the cooperation of leading men in science and industry, as represented by the large institutions of learning, and those of the factory, and that is the next great advantage, that the following decade is going to see in this country,—the coöperation of science and industry, the thing most desired to be brought about.

And now, while really only a start has yet been made to bring that about, it seems that this organization, as one of the national bodies coöperating with the United States Chamber of Commerce, might very well suggest such a move as I propose.

I think no one can doubt, after the great experience of Germany in that line, not to mention England, France or Italy, that we need not hesitate one moment in endeavoring to bring coöperation about.

And if it is in order, I move you that a properly drawn resolution be formulated, calling the attention of the Chamber of Commerce of the United States to this suggestion, as made, of calling a conference, and that copies be sent to the Secretary or Chairman of that body.

Mr. C. W. Johnson: I feel that the universities of the West stand more ready to coöperate with manufacturing interests and other interests, and it is tending to develop these industries. We recognize that we have many undeveloped resources, particularly in the northwest section, where I hail from; the University of Washington is doing everything possible and lending every assistance at its command to adjust the needs that Dr. Dohme suggests; in fact, we have stood ready to help in any way possible every industry that will tend to help our northwest section and develop any of the resources we have there. This suggestion that Dr. Dohme offers, coöperation with the United States Chamber of Commerce in the various universities, I think is a very excellent one. I have had considerable correspondence with Mr. B. L. Murray, who is a member of the Chamber of Commerce, I think, or on a committee working in some connection with the drug industry, in which he invited our state to assist in that work; in fact, we stand ready to do so, as I have indicated to Mr. Murray, and shall do everything in our power to assist the Chamber of Commerce.

Dr. Albert Schneider: Would it not be better to have a committee to draw up these resolutions? It would make the resolutions perhaps a little more complete than if drawn up on the spur of the moment.

Dr. C. E. Caspari: Mr. Chairman, while I am heartily in favor of a motion that a committee be appointed, I believe the conditions as pictured and painted are not as bad, or rather, are not quite so bad as they have been outlined. I believe there is a growing tendency of the universities to coöperate, and the institution he mentioned—the one that turns out so many professors—I allude to the Johns-Hopkins University—is having at the present time men doing research work for chemical factories in this country. And, that is also true of Harvard and Columbia, who keep their graduate students busy in each one of these branches, working along lines which are being developed to result in practical advantage afterwards.

A Delegate: Nothing has been said of the Carnegie Institute, in the way of research; while that does not exactly mean coöperation between universities themselves, yet it does take the fresh products of the industries and turn them over to the young graduates for solution; and many of the industries which have accepted the services of the Mellen Institute, have already reaped very material monetary benefits therefrom, and it seems one of the good ways of getting at it.

The Chairman: It has been moved by Dr. Schneider and seconded by Dr. Dohme, that a committee of three be appointed to draw up resolutions, and I

therefore appoint on this committee Dr. Dohme, Dr. Schneider and Dr. Caspari. Is there any further discussion on Dr. Dohme's paper and remarks?

It was moved and seconded that the paper be referred to the Publication Committee to take the regular course, which motion was carried.

The Chairman: The next paper on the program will be a paper by Dr. R. C. Holmes, entitled "A Safety Check Valve for Laboratory Vacuum Pumps."[2] There is another paper which really belongs to the division on Bacteriology. I shall ask the author if he will be here later in the day, because I want to get through with the chemistry first. The paper of which he is the author, and also the papers of which the authors are present, have been read with the exception of two papers, entitled "Estimation of Atoxyl" and "Stability of Preparations Containing Yellow Phosphorus," by Mr. Winters and myself, which I expect to read now.

(Chairman Engelhardt withdrew from the chair in favor of Dr. Koch.)

These papers[3] after reading and discussion, were referred for publication.

The Chairman: Now we have a few papers belonging to the sub-division of Chemistry, of which the authors are not here. There is a paper on "The Estimation of Morphine in Pills and Tablets," by H. W Jones; a paper by L. E. Sayre on "Sempervirine"; one by Dr. Dodge on "The Assay of Balsam of Peru"; one on "Color Reactions" by E. A. Ruddiman, and a paper by J. Paul Snyder on "Resin of Jalap." All of these are abstracted and can be read in this way, by title, or in full as our time will permit.

We come now to the sub-divisions of Biologic Assay and Bacteriology, and I will say that of all the papers we have, the author of one only is present. The idea of creating those sub-divisions of the Scientific Section has never been fully comprehended by your Chairman, nor could he ever see the reason why that was done. I have had the pleasure of being the first Chairman of the Scientific Section when the Section was divided into sub-divisions. To tell the truth, I had the support of but two of my associates in the attempt to solicit papers; so I tried to do it myself, and I see no earthly reason why we should have four sub-divisions. Now, in the sub-division of Chemistry we have eighteen papers; in the sub-division of Botany we have but two; in the sub-division of Biologic Assay and Bacteriology, we have eight, and in Bacteriology we have only one paper, that by Dr. Schneider. The first on the program therefore, would be the paper by Dr. Francis E. Stewart, on "Principles Underlying the Use of Vaccines, Bacterins, Antitoxins and Immune Serums, as Agents for the Prevention and Cure of Infectious Diseases."

This paper is abstracted as is also the one by Dr. R. Meinhard on "Leucocytic Extract." Dr. Schneider, will you read your paper?

Dr. Schneider: I owe you an apology. I thought I had the paper in my pocket, but find that I have left it in my office and will hand it to you tomorrow.

The paper is entitled "A Biological Test for the Presence of Arsenic, Tellurium and Selenium." The test referred to is not new. It is outlined in the last edition of Antenreith's Chemical Methods and has been in use in Europe for the last ten years. It was originally developed in Italy by Gosio and Biginelli. I am

[2] This paper was printed in the October issue, see page 1227.

[3] The papers will be printed with discussion in this or a subsequent issue.

bringing it before you at this time because I feel that many members of the American Pharmaceutical Association may not be familiar with it and also because I believe it to be a very delicate and satisfactory test which may be employed in preference to the usual tedious and time-consuming chemical tests.

The test depends upon the use of a fungus (mold) related to *Penicillium glaucum*, namely *P. brevicaule*, which is apt to develop on bread kept in damp, dark places. The test is made as follows: The suspected food substance, chemical or medicinal agent, whether liquid or solid, is mixed with bread crumbs, placed in a suitable flask and sterilized by the usual fractional live steam method, or in an autoclave for 20 to 30 minutes, and then inoculated with the mold, and flask closed with a rubber cap to retain odor. The mold may be kept in stock culture on bread in a moist chamber.

In case *P. brevicaule* is not at hand, any of the more common species of *Penicillium* may be used. Autenreith claims, however, that *P. brevicaule* gives the most pronounced reaction. The sterilized and inoculated material in the rubber capped flask is incubated at 30° to 37° C. for 24 hours.

Two other substances give a similar odor reaction with *Penicillium*, namely Tellurium and Selenium. The odor reactions for Arsenic and Tellurium are similar; that with Selenium is somewhat different, more like wet mustard, but quite distinctive. The odor reaction is not interfered with by bacterial, yeast or other contamination, nor by any number or kinds of admixtures of organic and inorganic matter. Should the substances to be tested be sufficiently acid or alkaline in reaction to interfere with the development of the mold, it must first be suitably neutralized.

The Chairman: You have heard the remarks by Dr. Schneider, and now what is your pleasure?

Dr. Dohme: Did you try the percentage, Dr. Schneider?

Dr. Schneider: Well, I tried the extreme limits; in fact, the test is so exact you have limits. It does give a slight reaction in regard to plants which are supposed to contain traces of arsenic. The reaction is so slight I would not call it conclusive—one and one-thousandth—it gives off an odor lasting for several weeks.

Dr. Dohme: As delicate as the Bettendorf Method then?

Dr. Schneider: Yes, I think so.

The Chairman: In connection with the Report on the Quality of Medicinal Products, Professor Day has just informed me that Professor Rusby has left those specimens here, which are referred to in this Report.

The Chairman: We will now proceed to the sub-division of Biologic Assay and Bacteriology, and I shall call upon Dr. Fred I. Lackenbach.

Dr. Lackenbach: Touching the subjects of biological chemistry, and refering first to our Chairman's remarks regarding having four sub-divisions, and knowing that he thinks that perhaps four are too many, let me say that when the matter was first brought up, in naming these sub-divisions, it was difficult to determine the best designation for the sub-division of which I am Chairman. Biologic assay usually refers to the assay of vegetable drugs. It does not popularly refer to the assay of what are termed biologic products. Now it would seem that the subject of biological chemistry has become of sufficient importance to warrant a sub-division devoted to that branch. If we could designate this sub-division "The Sub-division on Biological Chemistry," it could embrace not only the subject of "biologics"—the preparation and dispensing of serums and vaccines—but it could embrace also such subjects as sanitation and disinfection. Immunology also is a new science closely related to these subjects. It bears upon the phe-

nomena of natural and acquired immunity to infectious and contagious diseases. The up-to-date pharmacist should be conversant with these subjects.

Now the Scientific Section partakes more or less of a technical atmosphere. The subject of chemistry, as bearing upon pharmaceutical and chemical laboratory processes; the subjects of botany, pharmacognosy and biologic assay do not bring the pharmacist in very close touch with the practical problems of his vocation. While it does in a roundabout way have this end in view, what the pharmacist most needs is that which will render him more useful to the public and of greater service to the profession of medicine. Now I do not mean that the pharmacist must necessarily adopt a servile attitude toward the physician. When I speak of service to the physician, I mean service to the public *through the physician*. The physician himself is but a servant, a high-class servant. Whenever matters come up which are sources of annoyance in dealing with the physician, I endeavor to bear this fact in mind. I was just discussing with Dr. Dohme the matter of relationship between the manufacturing pharmacist and the Council on Pharmacy and Chemistry of the American Medical Association. Now if there is necessity for coöperation anywhere in matters pharmaceutical, it is for coöperation between the pharmacist and the physician; because the pharmacist has always been the helpmate of the physician. We must work out some scheme that will make the dispensing pharmacist of still greater value to the physician. If there is any means by which this may be brought about through the work of this Section, I am heartily in favor of such a movement.

Now, my sub-division comes very close to great human necessities; that is, to the grave ills of humanity. The greatest progress in medicine during the past ten years has been in the fields of immunology and biological chemistry. The tendency of medicine today is toward *prevention* rather than cure. This hits the conventional pharmacist pretty hard. It enormously cuts down the demand for drugs. You will find in the case of typhoid fever, for example, that it may be practically eliminated through the use of the immunizing agent, typhoid vaccine. It may be eliminated through the enforcement of proper sanitary regulations.

You all know what the demand was upon the pharmacist when typhoid was prevalent; and how about diphtheria, gonorrhea, and the "blood purifiers" used in syphilis? And tuberculosis: we can easily remember when great quantities of medicines were used in the treatment of tuberculosis—preparations of creosote, guaiacol, cod liver oil and petroleum emulsions, and what not. The approved treatment of tuberculosis now is along hygienic and sanitary lines and prevention. We now deal with *the problem* of tuberculosis, and its prevention. These are but a few which come to mind. There are many other serious ailments which have passed out of the realm of therapeutics into the domain of sociology, immunology and preventive medicine. No humanitarian or broad-minded pharmacist would stem this tide if he could. Re-adaptation is his necessity and his first duty.

Now, I am especially interested in two things: First, that the sub-division on biological chemistry include the subject of immunology and the subject of sanitation as a means of bringing the Section into more intimate touch with the requirements of the pharmacist of today and the pharmacist of the future. The second thought is that we take up Dr. Dohme's slogan, "Coöperation," and start in where coöperation is most urgently needed, and that is between the pharmacist and the physician.

Now, the great problem of pharmacy today is to advance the profession of pharmacy. That is, perhaps, the main ideal of the A. Ph. A.

The great problem of pharmacy today is to advance the profession of pharmacy. We either must advance the profession by improving the mental equipment of the pharmacist, or we must relieve him of all necessity along that line, and permit him to develop along strictly commercial lines. In the latter event he must be discouraged from making any pretensions to professional attainment.

What I am getting at is this: My wife and I were down town one evening. She wanted some soap powder. We went into a big chain drug store, and after purchasing what we wanted we were offered half a dozen other things, having no bearing upon our purchase. That was all well enough. We went out of the store by a rear exit where we observed a small refrigerator marked, "Biological Department." That excited my interest. I ducked down, looked through the glass front, and saw a few scattered packages of bacterial vaccines, and some other products which I won't mention. I then lifted up the top where there was a chunk of ice, about the size of my fist, with three bottles of Mumm's Extra Dry hugging it close. The man in the prescription department was beginning to eye us suspiciously, so we withdrew.

Now, that concern is distinctively "a drug store," but because of the advertising value attached to it, they made a pretense of distributing biological products, because biological products are presumed to be high-class pharmaceuticals.

I recall reading a paper in the last number of the Journal of the American Pharmaceutical Association by a Mr. Nelson I believe, in which he advocated pharmacists taking up laboratory work as a means of advancing their professional status. I read the paper very carefully and I found that while his logic was good insofar as taking up the examination of,—we will say, inert materials, —to determine their purity, etc., but when it comes to dealing with clinical problems, that was another proposition. The matter has been discussed before this Association before,—the proposition of the pharmacist doing clinical laboratory work. Now, we have had some experience along this line. We have a department in which we undertake all manner of clinical laboratory work. We tried out every class of help that suggested itself. We have tried out graduate pharmacists; we have tried out thoroughly experienced prescription men; we have tried out nurses,—some very capable ones,—who were graduates and who had taken up laboratory work. The last one we tried out was a young man who received special training under one of our laboratory staff, and was supposed to have developed into a very good laboratory worker. But he gave it up. Clinical laboratory work involves such responsibilities the very best trained man is none too good.

We decided that the best person to do clinical laboratory work is one that has had special medical training. If the pharmacist is going to undertake clinical laboratory work, he must have a certain amount of special medical training; possibly a medical preparatory course. The two-year preparatory course that is given in our universities in California would perhaps be sufficient preparation. When it comes to determining a diagnosis of syphilis, where the happiness of a human being and those dependent upon him is at stake, the laboratory man assumes an enormous responsibility.

We have such matters brought to our attention most every day. Really they are about the most pathetic things on earth. We will receive, for example, a specimen of sputum, and we may find no tubercle bacilli in that sample. If the patient learns of the findings, he, of course, will feel gratified. But perhaps the next specimen from the same case may be chuck full of tubercle bacilli. A laboratory man who is only a laboratory man will report no T. B. to be found. If he reports direct to the patient he will convey the impression to that patient that he has nothing to fear. It is not only the laboratory technic, it is the ability to tell the *significance of the findings* that makes the laboratory worker of real value.

My paper to be read before this Section dwells upon that point, and I would say that it is only a fragmentary presentation of a great subject,—this subject of clinical diagnosis. Yet, with all the responsibility that I lay stress upon, I believe that the future of the pharmacist is along these very lines,—to be able to assist the physician in his diagnosis.

It is a very important subject. The physician endeavors to educate a nurse, perhaps, to handle that work for him, or he sends it to a commercial laboratory,

or he takes a medical student as assistant. But these are all makeshifts. The nurse as a laboratory worker is only occasionally a success. The medical student is working with a view to taking up the practice of medicine, and the commercial laboratory, as a rule, is not interested in the patient. The pharmacist, on the other hand, is usually a man of good judgment; has received special training along kindred lines; is a man of integrity, and broad sympathies, and a responsible person in the community. If the pharmacist can be educated to do that work for the physician, it will certainly elevate his professional status very materially.

There were some other things I had in mind, but I am sure I have already imposed upon your indulgence too greatly.

The Chairman: You have heard the address of Dr. Lackenbach, and it is now open for discussion.

ABSTRACT OF DISCUSSION.

Mr. Hamner: It is very presumptuous on my part to address you, but I do claim that the pharmacist is better equipped by education from every point of view than the average practitioner of medicine. Practically all laboratory work deals to a large extent with reagents, either chemical or biological. A practicing pharmacist, working at his profession constantly, must be familiar with these reagents, while a practicing physician doing such work rarely, is not, and for that reason I rather take exception to his assertion that a man should have medical training rather than pharmaceutical training in addition to biological work.

Dr. Schneider: Would you be willing to say that the medical profession, as such, welcomed the entry on the part of the pharmacist into laboratory work with a view to doing such work?

Dr. Lackenbach: I think so.

Dr. Schneider: I think the medical profession is inclined not to do so, but I may be mistaken there.

Mr. Hamner: In our line, in the Army, we depend very largely upon biological research in our laboratory work, upon our biologists in the Army, and I find from talking to the surgeons, that they are very glad and anxious to have men trained along that line of work, men to whom I can turn over that work to do. As I said before, in their general practice, physicians themselves do not do enough of such work to keep them perfectly familiar with the necessary detail of laboratory work.

Dr. Zieg: I think pharmacists should consider that an important thing, and I quite agree with the last speaker, that from the standpoint of the actual doing of the work, that the pharmacist should have more desire to do it. But there is really another important step between the actual doing of the thing, the thing to be examined, and the interpretation of the result, which is quite important; that is, to see that the obtaining of the thing to be examined, the specimen to be obtained, the actual care of it up to the time it is to be manipulated, and then the actual care in regard to the avoidance of deterioration while it is being manipulated. These are things which the pharmacist, because he has more or less turned his face away from the subject, does not have a full appreciation of.

I think because of the great necessity, and the coming greater necessity, both in actual therapeutic use and in actual sanitary and preventative medicine, that it is certainly one of the biggest fields that the pharmacist could step into if he acquires the proper ability, and also broadcasts that acquirement in such a way that those who depend upon him—that is, the medical profession—can rely upon his ability. So far I agree with both speakers.

Dr. Val Schmidt: My observation has been that many physicians who have a large practice, do that. I know a number who have a large practice in this city who employ a bacteriologist, a man especially trained to do that kind of work. They have him make these examinations for the finding of tuberculosis,—for the examination of sputum in tuberculosis or diphtheria,—or any of those branches, and the physician himself does not do it. In the first place, he has not the time. I am speaking of those who have a large practice, and there are a great many here. They all have their men. And they have a special laboratory, a little laboratory set aside in their offices, and when the physician gets a case that needs

examination he hands it over to his man, and he generally has confidence in him and he acts upon it. Now we cannot expect, at least the public cannot expect a busy physician to make those examinations himself. He must have men to do that sort of work who are well trained and upon whom he can rely, and I believe that is being done, as a general rule.

Dr. Dohme: Mr. Chairman, I would like to set forth the experience of physicians in our city in work of this kind. I believe it is a work growing in importance and extent. I speak of clinical diagnosis. I believe the medical profession has done by far too little heretofore and I believe they are beginning to realize the fact that they have not done enough of it, and in consequence they are doing a great deal more of it now than ever before. And in Baltimore, they are developing certain physicians who are making a specialty of this clinical diagnosis, by equipping themselves with laboratory apparatus and a laboratory which will enable them to practically answer all the requirements of a practicing physician or surgeon, in a most thorough and scientific way. But, as I say, these men who are developing in our city at any rate, are in all cases, or at least in the principal number of instances I know of, physicians who, instead of doing practical work—practicing medicine—are practically making a specialty of clinical diagnosis, and making a very good living at it.

I know one intimate friend of mine who was the originator or beginner of that work, and he makes as much on his work as many of our leading surgeons do, as a source of income. With his equipment and his knowledge, as pointed out by the previous speaker, he is, in addition to being able to say what the sputum contains, or what that blood stain indicates, or this or that secretion contains, able to give the physician some practical idea of what he thinks are the conditions that produced it, or how he can remedy it. And, if this is true, it looks to me as if the added medical attention might serve some added purpose, not merely finding out what is in that particular secretion, because, as the gentleman says, there are many of our physicians who have not the time and who perhaps haven't the ability to go into the intricacies that such an examination would require in order to make a diagnosis and to form a correct conclusion. An expert with this training in clinical diagnosis could give such information to the physician as would probably be the means of indicating treatment or suggestive cause. I am only mentioning that as an experience.

There is, however, one of our retail pharmacists,—by the way, he is here today, Mr. Hynson,—who is also developing a very large practice in that line and whose specialty is, more perhaps than other retail pharmacists, catering not only to the wants of the physicians, not only looking after their prescriptions, but also, so far as his equipment goes, of aiding them in this way, proffering such assistance to them, either at the home or at the office.

And his firm is developing a line of clinical diagnosis which promises to be of quite some value to them. And as I recall it, the man in charge of that work is a pharmacist in this case, but I do not think from my own personal knowledge, it may not be very thorough,—that the results which you would obtain there, or the doctor would obtain there, would be as satisfactory to the doctor as the results he would obtain from the physician diagnostician.

Dr. Lackenbach: I do not think I made notes of all the speakers in the discussion, but to take up Dr. Dohme first, I would say that the physician who specializes in laboratory work is usually the physician who has not been successful in building up a general practice or taking up any special field of endeavor, or he may have a liking for laboratory work. Now, it is hardly possible that he would have a liking for laboratory work, as such, because it is mostly drudgery, very hard work, and it is not profitable work unless he can get a great deal of it to do so that he can employ assistants to do the rough work and run through a number of tests at the same time, as in the case of the Wassermann tests. Another thing is that physicians are not always inclined to send their patients to these laboratories. They fear it might have undue influence on the patient in some way.

Taking up the first speaker: The pharmacists in the Army and Navy are usually pretty well equipped to do clinical laboratory work. In fact, they are the only class of pharmacists who have had such training. I know of some men who have been trained in the Army who have established very prosperous commercial laboratories.

Their time, as a rule, is not so valuable as the time of a medical man,—the man who has had a medical training,—they are able to do the work cheaper, and in that way are agressive competitors to the medical laboratory specialists.

Mr. Schmidt is perfectly right, that men who have large practices have clinical laboratory workers who do most of their work. Usually a group of medical men will have a clinical laboratory worker, but that is largely confined to a few groups of physicians. The ordinary run of medical men cannot afford such a luxury.

A matter that Dr. Zieg brought up is of very great importance, that the medical men do not often understand how to gather the material for the laboratory worker. The material that comes into the clinical laboratory is an outrage many times. It shows the physician hasn't the remotest conception of what is embraced in the laboratory test. Of course, if the pharmacist were to undertake that work, it is pre-supposed that the pharmacist would be in a position to instruct the physician along these lines. Was there any further point, Dr. Zieg?

Dr. Zieg: Merely touching the point that the physicians are really willing to have the work done by the pharmacists.

Dr. Lackenbach: That is a very important point, and that is where the shoe pinches. The physician doesn't want *the druggist* to do his work. I wouldn't want the average druggist to do my work. But the physician does want a high-class man to do his work, and he receives such a man with open arms. He does not want an incompetent druggist to determine whether or not his patient has syphilis, but he would receive a high-class man, and I do not mean necessarily that a man in order to be a high-class man, must have a number of college degrees. My idea about pharmaceutical education, I am sure, differs very materially from that of the college professor. Our President brought up that subject in his annual address. He commended a system of education permitting elective courses to be followed, not only in the university, but in the high school and grammar school as well. Now my idea is that the ordinary student, after he graduates from grammar school, should select the studies for which he has a natural bent. He should not be put through a set course of studies, with a view to putting him through the university. It is really pathetic, the young people we get from the high schools, and even the people we get out of the college. They are helpless. They cannot do practical things. They have to live more or less in exile for two or three or four years until they find themselves—until they find what they are actually fitted for. I think this idea of putting a student through a regular course of study, graduating him from the grammar school, and then the high school, and then sending him to college is a false idea of education. It makes of the college graduate many times if he is weak, a snob, to use a slang expression. He is a conceited being, with a conceited notion that he is a superior being. Another thing, he uses the college as a means of advancing himself; proclaiming that he is a college graduate, he endeavors to obtain a standing that he is not entitled to by virtue of his own abilities—his own actual worth.

The pharmacy student can take up special studies—certain courses in the pharmaceutical college that he likes, as, for instance, pharmaceutical chemistry. He might take certain lecture courses and certain laboratory courses. Then he can take certain courses in the medical college that will render him capable. He does not necessarily have to work for the college degree.

The Chairman: It is moved that Dr. Lackenbach's address take the regular course of being referred to the Publication Committee.

Dr. Dohme: Mr. Chairman, I would like to move in connection with that, or rather amend that motion, by suggesting that at our next meeting the topic of clinical diagnosis from the standpoint of the pharmacist be considered as one of the subjects to be discussed at the Scientific Section.

The Chairman: You have heard the amendment by Dr. Dohme, that the topic of clinical diagnosis may be made the subject of a paper or papers at the next meeting of the Association. What is your pleasure?

(It having been regularly moved and duly seconded, and the question having been called for, the motion was declared carried, and it was so ordered.)

The Chairman: That covers the address of Dr. Lackenbach, and also his paper, which was read and referred.

We have a paper by Mr. H. A. B. Dunning, on "Remarks on Phenol-Sulphone-Phthalein," and one by Professor E. L. Newcomb* and Mr. R. A. Hall, on "Comparative Physiological Activities of Digitalis Species."

Dr. J. A. Koch: We have a resolution from the committee appointed a short time ago:—

"Resolved, That the Scientific Section of the A. Ph. A., request the Chamber of Commerce of the United States of America to call a conference of representatives of universities and educational institutions of this country, and of our leading industries, for the purpose of developing some practical method of bringing about the coöperation of science and industry with a view to perfecting and advancing the industries of our country."

The Chairman: A motion is in order.

(It was then regularly moved and duly seconded that the resolution be adopted; motion carried.)

RESOLUTION PROVIDING FOR COÖPERATION WITH THE INDUSTRIES.

WHEREAS, It is generally admitted that commercial progress in Germany in the past two decades has been the result of a hearty and complete co-operation between the scientific and industrial organizations of that country; and

WHEREAS, All the financiers and business men will concede the application of the science of the university to the practice of the factory will produce similar results in this country; and

WHEREAS, It is our opinion that the next great stride in our commercial growth will be in the direction of applying our scientific training represented by the university to practical use in our industries; and

WHEREAS, The factory and the university have stood aloof from one another to the disadvantage of both these many years; therefore be it

Resolved, By the Scientific Section of the American Pharmaceutical Association, that the United States Chamber of Commerce be requested to call a special meeting of representatives of the leading institutions of learning and of leading large manufacturing interests of the country, together with representatives of the leading banking interests of the country, for the purpose of considering ways and means of generating and fostering a spirit of closer coöperation between them than has heretofore existed or now exists

Professor Edwin L. Newcomb: The paper I have prepared is chiefly on results, and I will not take the time of the members of the Section, to read all of the results, but simply name the methods which were employed and a few of the data concerning the drugs on which they were made.

"Comparative Physiological Activities of Digitalis Species"* is the title. I wish to say that the work has been done jointly by Dr. R. A. Hall, of the Medical School of the University of Minnesota and myself.

There were some thirty or forty animals used. Table "A" includes all the results, and Table "B" is a summary I have prepared.

It might be said in connection with the work on guinea pigs, that the work was quite satisfactory, so far as the investigators were concerned; that is, in only one case was there any great amount of discord.

The Chairman: We have papers also by Mr. L. E. Sayre, C. W. Ballard, C. S. Chase, and others. It is twenty minutes past four, and it might be well, since the authors are not here, that we read some of the papers in abstract as mentioned by Dr. Dohme before.

Dr. Turner: I do not think it is necessary. It seems to me that inasmuch as some of these authors are not here—and the authors should be here to reply

* The paper is to be presented later by the authors and was referred for publication.

to questions and objections which might be raised—that we had better stick to our old motion to read them all by title, and I will make that motion.

The Chairman: It was brought up by Dr. Dohme at the beginning of the meeting, and a motion was made and amended that the old custom be followed, if time permitted—that is, that the abstracts of the papers be read,—and it was accepted. I am willing to dispense with the abstracts, but to read all of them would take but twenty minutes or so. If our Secretary feels so inclined, they will be read. And it was so ordered, and the papers were read in abstract.

The Chairman: I beg to say that I have three papers, one by Mr. Twining, one of the papers covering a well-known assay method and another a well-known diagnostic process, and also a paper on "Approved Methods of Biological Standardization of Drugs," by Dr. C. S. Chase. Also a paper on "Color Reactions," by E. A. Ruddiman. I did not find it necessary to abstract it, as it is a short paper, and might be read in short, since it is against our rules to do otherwise. Dr. Ruddiman dwells on the fact that it is very difficult to distinguish one alkaloid from another, by the specific reactions, because the alkaloid might contain some kind of an impurity which makes the color reaction rather indistinct. He again points out that it is absolutely necessary that the various alkaloidal preparations should be prepared in a certain way.

This is all, with the exception of three which have not been abstracted. You are well acquainted with the diagnostic tests for kidney diseases, and if you so desire I shall be very glad to abstract the one by Mr. Dunning on Urease.

You all know that Urease is an enzyme which has the property of converting urea into ammonium-carbonate. It also determines the urea in the urine. I think we can refer this paper without abstracting it.

Gentlemen this will wind up all the papers we have, so the session tomorrow will, consequently, be only a very short one. We will have to select officers tomorrow morning and install those that might be present.

A motion to adjourn was carried.

MINUTES OF THE THIRD SESSION OF THE SCIENTIFIC SECTION.

The third session of the Scientific Section was held on Thursday, August 12th, at 9:30 A. M. Chairman Engelhardt presided. The first order of business was the election of officers, which resulted as follows:

Chairman, Mr. W. L. Scoville.

First Vice Chairman, Mr. L. A. Brown.

Second Vice Chairman, Mr. Joseph L. Turner.

Secretary, Mr. E. L. Newcomb.

Upon motion, a vote of thanks was given the retiring Chairman.

The Section then adjourned.

APPROVED METHODS OF PHYSIOLOGIC STANDARDIZATION OF DRUGS.*

Historical Sketch.

CHARLES S. CHASE, M. D.

The general subject of standardization of drugs, from the chemical standpoint, is too well known to this body of scientific men to require more than the mere statement. The author of this paper does so, chiefly for the purpose of correlating it with the subject of this paper.

That there was once a need of standards, at the time of the beginning of the publication of the Pharmacopœia, almost a century ago, also goes without saying. To be historically exact, it may be stated that the Pharmacopœia was born in 1817, and that Dr. Lyman Spaulding was its historical father. The narrative touching its infancy and early days and growth, as found in the early part of its introduction, must always prove very interesting reading to the members of your profession.

The thought at the date mentioned, no doubt, was that polypharmacy had held sway long enough. Times even at that long-ago date had advanced sufficiently so as to exact more scientific and less slip-shod methods; more science and less empiricism. Once started, the work of improvement and perfection grew apace, each succeeding decennium adding its moiety of art and of science toward the attainment of a better and still better "book of standards."

At the outset the medical profession appears to have been much in evidence in its development and promulgation. Later and even at the present day your profession has led the way with acceptance and profit. Both professions, however, it is pleasant to remark, have shown during the last two decennial periods a better spirit toward each other, a spirit of "getting together" in this important work. As a result a composite work is clearly developing, made up of contributions from every available source.

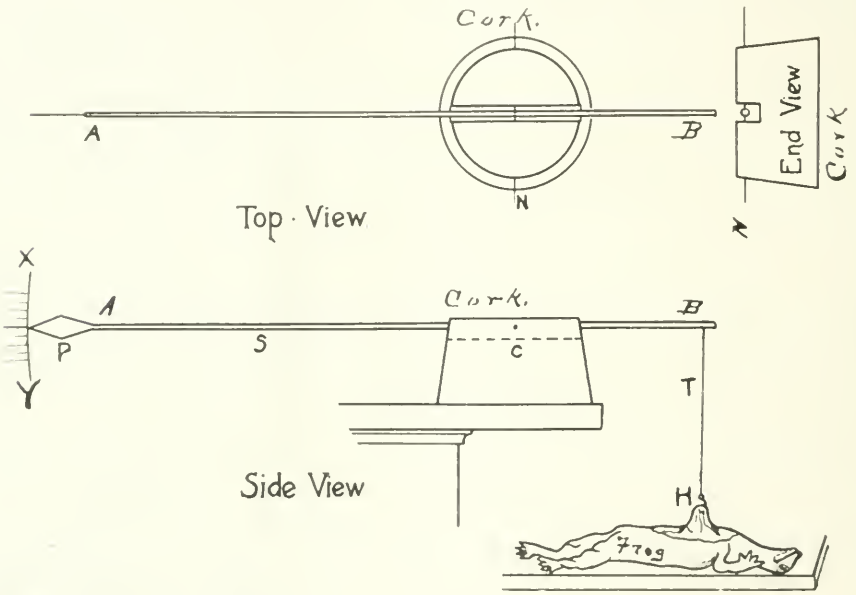
In the foregoing brief historical sketch of the Pharmacopœia it is interesting to note that not until the Revision of 1890, the seventh in order, did there appear specific direction as to establishment of "standards of purity." So interesting and so important as well does this point seem to your essayist that he craves your indulgence of a somewhat lengthy quotation from the introduction of the Revision mentioned. As touching this point it declared as follows, "It was recommended by the Convention that assay processes should be appended to the United States Pharmacopœia, descriptive of the "energetic," or "otherwise important" drugs, and to such galenical preparations as the Committee of Revision of the Pharmacopœia should deem wise, especial care being taken that assay processes for *Opium* and *Cinchona* should be attended with as little manipulative difficulty as possible; that the standards of purity of drugs should not be above the point of practicability, etc." The deductions your essayist makes from these statements, which seem to him to be important, are two-fold, namely, first, that a beginning to set "standards of purity" should have been made at so recent

*Presented at Scientific Section, A. Ph. A., San Francisco meeting.

a date; and, secondly, that a few years later (1900) the second step, "physiological standardization," should have been suggested; "suggested" only, to be sure, without recommendation to make use of such process. It is with much satisfaction, however, may it be hoped we all agree, that the last Revisional Convention, that of 1910, created a large Committee with full power to act, touching this among other matters. At the date of preparing this paper your essayist understands the Revisional Committee will make processes of pharmacologic assaying optional with the pharmacist in the forthcoming revision.

PRACTICABILITY OF PHARMACOLOGIC ASSAYING.

That galenicals are more likely to be efficient when standardized by any ac-



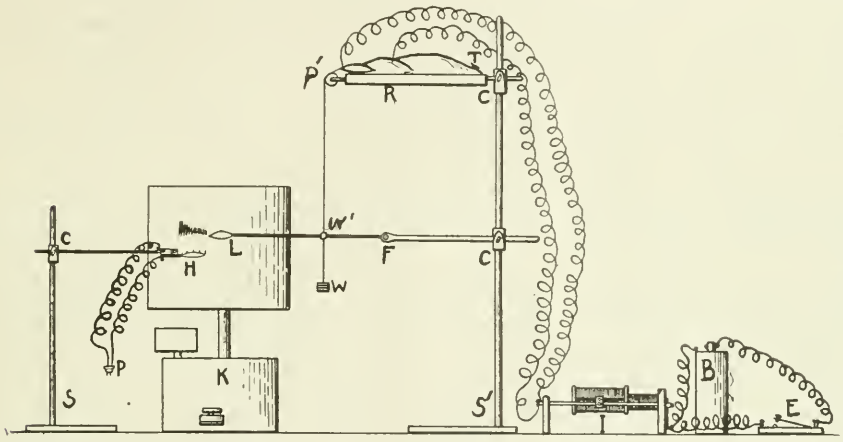
Read from left to right:
Top view.
A.....B.....long straw (soda fountain straws answer purpose).
Cork
N.....needle piercing cork through slot as shown in "End-View."
Side View
A.....B.....long straw, same as shown in "A.....B" in top view.
B.....H.....cord leading from end of straw to heart of frog.
P.....pen made of stiff card board, moving through arc, "X-Y."

cepted process is practically axiomatic. Indeed nearly all crude drugs of importance, whose active principles can be isolated and estimated without destruction by chemical assaying, are required by the present Pharmacopœia to be so treated. A few, however, notably those containing glucosides, which are of the greatest importance in practice, can not be so treated. Digitalis, strophanthus, squill, and almost all of the so-called, "digitalis bodies," are of this class. Ergot may likewise be included in this classification, for it is also practically non-assayable by chemical processes. Under former pharmacopœial direction it was evidently assumed the crude drugs must have been, perforce pure, whatever that term may have meant, and "void of offense" (intentional at least). Under the "New Plan," as it might well be called, the drug, with its galenical preparations, is to be challenged at every step in its journey toward "certainty of actions," as

shown by its assay. Could more be desired? Should less be accepted, where the issues are, life or death?

Pharmacy, as an art has all along kept even pace with its sister arts; but, as a science has it or has it not lagged sadly behind? Who, though, can challenge its splendid modes of encapsulating disagreeable and nauseating drugs? Who does not welcome the ampoule and the spiret as sure means of preventing deterioration of active principles? Who can fail to commend the skillful methods of preparing for use vaccines and sera, so skillful, indeed, as to make infection in their use almost impossible? Much more could be said, much more deserves to be said in praise of your profession along these lines.

But to be more specific in this discussion is it asked, "how" and "to what



Reading from left to right:
S.....stand to which is fastened signal magnet support (C).
P.....plug to electric battery.
H.....marker (made of cardboard pen.)
K.....kymographion (machine run by clockwork carrying smoked paper.)
S' tall stand writing pen for drum.
C.....clamps.
R.....support for specimens.
F.....hinge for writing-pen arm, F.....L.
T.....tack through specimen.
P' pulley carry, thread to weight (W), fixed by wax to F.....L (W').
I.....inductorium.
B.....cell conveying electrical stimulus to specimen on support.
E.....electric key for regulating current.

extent" may pharmacology be an aid to the pharmacist? Let the reply be, first, as to "how it may be." It can be a help in almost every way, and a hindrance in none. Does one question whether, for instance, digitalis, or any member of its group of drugs, or ergot also, if standardized physiologically, the only way most of them can be standardized at all, the result in their use would not meet with instant approval? Surely those who prescribe and those who must use these drugs would do so. The uncertainty as to the strength of supposed active principles in these drugs, affecting so vital a process as circulation and its control, has been too long a reproach upon the professions of medicine and pharmacy. This reproach, fortunately, has been very largely removed by the large and scientific manufacturing houses of our own and other countries, to their great credit may it not be declared.

Secondly, "Is the process feasible or practicable?" it may be asked.. This query might be considered as practically a corollary to the two immediately preceding propositions. To whom, "feasible?" For whom "practicable?" To the pharmacist, wholesale and retail, in reply to the first. For the physician and his patient, in reply to the second inquiry. Is the "process" one to be easily learned by the former class? Can it be acquired by one long out of school and in business? Are "short courses" possible in schools, if one desires to avail himself of such means of information? Has the subject been taught in schools of pharmacy, and, if so, with what degree of helpfulness? These and many other questions suggest themselves at once to the progressive mind, and deserve careful and thoughtful answer. The wholesale manufacturing houses already alluded to are daily answering some of these questions with great acceptance. An attempt will be made to answer them as applied to the retailer, especially those who manufacture their own galenicals from crude drugs, later. As to the "teachableness" of the subject to undergraduate students, or graduate students as well, the best reply is to submit a concrete case in which it has been done.

The essayist as long ago as 1905 was impressed with the thought that the pharmacist more than the physician should be trained in pharmacology. He introduced it, therefore, in his course in materia medica in the College of Pharmacy of the University of Iowa. He provided, however, for an antecedent course in physiology, covering about the same ground as is suggested by the Pharmaceutical Syllabus. With this course as his foundation the student was led through a purely didactic course in materia medica, the action of drugs being strongly emphasized. Following this a purely laboratory course was given, illustrating by means of animal experimentation all the points made in the didactic course. Especial attention was directed to the glucoside-containing drugs. An opportunity was also made use of in illustrating toxicology, by means of pushing drugs beyond their therapeutic limit and requiring the application of suitable antidotes in each case.

No more interested or enthusiastic classes were found than those whom the essayist was required to teach in the institution named. These consisted of students in the medical and dental colleges therein. The courses differed in the three colleges in no essential detail, only in the amount of work required. The "evidence from the field," also during the years that have passed since the work began has been uniformly supportive and in justification of it. Many of our graduates have pronounced it helpful to them beyond their belief when taking it. Some of them, indeed, have equipped their laboratories quite elaborately with expensive apparatus with which to carry on this mode of assaying as well as the modes they have for so long a time been accustomed to.

PRACTICABILITY FOR THE RETAIL PHARMACIST.

Probably no statement made in the present paper will be more quickly challenged by the retail pharmacist, especially by those who have had no opportunity to observe the practical working in a laboratory, than this particular division of the subject. Is it really possible for one not thus trained to undertake to familiarize himself with it? The essayist considers it easily possible. He believes, further, that no class of pharmacists will more enjoy the actual laboratory

work than these. The processes are no more difficult and much less intricate than many of those laid down for chemical assaying.

At the risk of being prolix I cannot refrain from presenting somewhat in detail at this point methods used by my own students in their laboratory work. Among many excellent processes for standardizing drugs the essayist selected that of Famulener and Lyons, known among pharmacologists as the "One Hour Method." It consists, briefly, first, in carefully selecting the frogs required by the method. They should average in weight from 20 to 30 grammes. They should be kept in a cool place, in ice during the summer months. When possible they should be procured as fresh as may be, from near-by brooks, or from swampy fields. When needed for experimental purposes they should, first of all be pithed in the brain, thus rendering it insensible to pain, as well as immobilizing the animal; next exposing its heart by cutting away a small diamond-shaped portion of the skin over the same. Thus prepared, with the animal lying upon its back, a pin bent to resemble a fish-hook is passed through the apex of the heart and connected by means of a thread to the short arm of a straw lever. (The method of constructing this piece of apparatus, as well as a more elaborate and expensive one will be shown with this article.) Thus exposed and attached the test as to efficiency of drugs of the cardiant type is easily made. The drug to be tested, usually a fluidextract with its solvent driven off by heat over a water-bath and water in sufficient quantity added to bring it up to its original volume, is allowed to drop continuously upon the exposed heart until its pulsations are observed to cease. The dose which accomplishes this is known as the L. F. D. (Least Fatal Dose). It is customary to prepare several frogs of about the same strength and weight, and as many doses of the tested drug. Thus a frog and its dose of the drug will be found in which the pulsations will cease in *exactly one hour*. This dose should be considered the L. F. D. sought and should be carefully noted. Corroborative tests should be made and averages struck, as in volumetric chemical analyses. From the findings thus obtained the dose suitable for the human patient is easily computed.

A second illustration of testing a drug physiologically is found in ergot. This drug is known to possess, if potent, strong vaso-constrictor action. So powerful is this action that an animal like a cockerel is usually selected for testing purposes. The white leghorn is best, because of its prominent comb and wattles, both of which are highly vascular. The preparation of the drug usually selected is its fluidextract, and the mode of its application is by hypodermatic injection into the muscles of the breast. If the drug is potent a very marked discoloration will appear within an hour or so, shading from a simple bluish to a bluish-black color. The duration of the discoloration will depend, usually, upon the strength of the specimen tested. The normal color will return ordinarily in a short time, and the animal can be used again. This method is the one used and recommended by the Bureau of Public Health at Washington, D. C., and is submitted, therefore, as the one to be preferred in practical testing for this particular drug.

It will be observed in Fig. 1 that the apparatus may be very simple and inexpensive. In Fig II it is more complicated and expensive.

College Pharmacy, University of Iowa.

COLOR STANDARDS AND CUDBEAR.*

H. V. ARNY AND C. H. RING.

In 1908 the Committee of Revision of the National Formulary appointed a sub-committee of which one of the writers was chairman, to devise a means of standardization of the color of tincture of cudbear and tincture of caramel made by the methods proposed for the next issue of the Formulary. The difficulties of establishing such standards were explained in detail in a paper that appeared in the *American Druggist* (60-1912-35); the finding of standard color fluids was announced at the Eighth International Congress of Applied Chemistry (Jour. A. Ph. A., 2-1913-76), while the elaboration of the work to practical completion is the subject of a paper appearing in the *Journal of the Franklin Institute* for August, 1915. At this time we will merely demonstrate the standard fluids and will announce that the most difficult problem of all, the matching of cudbear tinctures, has been accomplished.

The result of the work first outlined was the devising of three sets of standard colored fluids, which we have designated as the "Co-Fe-Cu" the "Co-Cro-Cu" and the "Cro-Manganate" blends.

The "Co-Fe-Cu" tints have as their basis: *Red Acidulated Half-Normal Cobalt Solution* containing 59.49 gm. of cobalt chloride, $CoCl_26H_2O$ to the liter, the solvent being one percent hydrochloric acid; *Yellow Acidulated Half-Normal Ferric Solution,* containing 45.05 gm. of ferric chloride, $FeCl_36H_2O$ to the liter, the solvent being one percent hydrochloric acid; *Blue Acidulated Half-Normal Copper Solution,* containing 62.43 gm. copper sulphate, $CuSO_45H_2O$ to the liter, the solvent being one percent hydrochloric acid.

The "Co-Cro-Cu" tints are prepared from ammoniacal solutions of the three elements mentioned, the solvent in each case being 2.8 percent ammonia water. These consist of *Red Ammoniacal Fiftieth-Normal Cobalt Solution,* containing 2.7 gm. of roseo-cobaltic chloride, $CoCl_35NH_3H_2O$ to the liter; *Yellow Ammoniacal Fiftieth-Normal Chromium Solution,* containing 0.420 gm. of ammonium dichromate, $(NH_4)_2Cr_2O_7$ to the liter; and *Blue Ammoniacal Fiftieth-Normal Copper Solution* containing the equivalent of 2.49 gm. copper sulphate to the liter.

Details concerning the preparation of these "Co-Cro-Cu" fluids and their blends will be found in the *Journal of the Franklin Institute* for August, 1915.

The blending of the acidulated fluids to make the "Co-Fe-Cu" tints, and of the ammoniacal fluids to make the "Co-Cro-Cu" hues can, of course, be performed in any proportion that fancy suggests. The 91 samples of each series exhibited include the possible blends produced in making 12 cc. of finished fluid when the ingredients are mixed in even (non-fractional) cubic centimeter quantities. The nomenclature devised is of the simplest kind. Thus the original red fluid is "R. Y. B. 12-0-0" the original yellow is "R. Y. B. 0-12-0" and the original blue is "R. Y. B. 0-0-12." The sample designated as "R. Y. B. 6-6-0" will of

* Presented in Scientific Section A. Ph. A., San Francisco meeting.

course be an orange hue, that called "R. Y. B. 0-6-6" will be green, while "R. Y. B. 6-0-6" has a purplish hue.

That the intensity of color of each of the three basic fluids is about the same as shown by the fact that "R. Y. B. 4-4-4" closely approached, both in the "Co-Fe-Cu" and in the "Co-Cro-Cu" series, the "neutral gray" which is the nearest that blended reds, yellows and blues can approach to pure white in solids or transparent colorlessness in fluids.

As to the permanency of these fluids: the original acidulated cobalt, iron and copper solutions and their blends neither fade nor precipitate to a perceptible degree until at least two years old: the ammoniacal cobalt and chromium solutions have now been under observation for over a year without any fading being detected. The ammoniacal copper on the other hand precipitates and consequently undergoes color change after a few weeks, but our experiments so far show that the blends keep satisfactorily when sealed in ampuls. Moreover the ammoniacal copper solution is in practice prepared extemporaneously by diluting the permanent half-normal acidulated copper solution to fiftieth-normal strength by addition of ammonia water and water, hence the preparation of the "Co-Cro-Cu" blends is merely a matter of mixing solutions that can be kept in stock for months without deterioration.

Having prepared a line of color fluids, the next move was their application as standards. As announced in the paper read before the Eighth International Congress of Applied Chemistry it was found that a standard *Caramel* solution prepared by heating 1 gramme of sugar to 180° C and then diluting with water to 500 cc. matched the "Co-Fe-Cu" blend, R. Y. B. 4-7-1. During the past year, we have found that in a properly conducted *Nessler Test*, an ammonia dilution representing a nitrogen content of 1 to 500,000 matched the "Co-Fe-Cu" blend 3-9-0, when this half-normal mixture was diluted to "50%" of its original strength by addition of an equal volume of water: that the color of the *Phenol-Sulphonic Acid Test for Nitrates* when the nitrogen content was 1 in 500,000 was matched by "Co-Fe-Cu" blend 0-12-0 when this was diluted to "66%" strength: that the *Molybdate Assay for Phosphoric Acid,* 1 in 20,000 gave a yellow color exactly matched by "Co-Cro-Cu." 0-12-0 diluted to "15%" strength: that *Folin's Vanillin Test* when the vanillin content was 1 in 100,000 gave a color matched by "Co-Cro-Cu" blend 3-3-10: that *Riegler's Uric Acid Test* of a uric acid content of 1 in 40,000 had the same tint as "Co-Cro-Cu" blend 2-2-8: and that a salicylic acid dilution of 1 in 50,000 when treated with the proper amount of ferric chloride solution produced a color exactly matching "Co-Cro-Cu" blend 7-1-5, that had been diluted to 65% strength.

In carrying out these colorimetric tests, exactitude of manipulation is essential and the procedure to be followed will be found in detail in a paper which will be published in the near future.

As mentioned above, the two sets of colored fluids "Co-Fe-Cu" and "Co-Cro-Cu" fail when it comes to certain shades of red. Thus the color produced in the *Naphthylamine-Sulphanilic Acid Test for Nitrites* had no match in the pink fluids of the two sets of standard blends. This led to the study of other possible standard fluids that would supply the hues not attained by the two sets of blends just mentioned and these were found in two solutions kept in every well equipped

analytical laboratory, the volumetric solutions of potassium dichromate and potassium permanganate.

An investigation of these fluids showed that a one-thousandth-normal permanganate volumetric solution containing 0.0313 grammes of $KMnO_4$ to the liter has about the same intensity of color as a one-hundredth-normal dichromate solution containing 0.487 grammes of $K_2Cr_2O_7$ to the liter and blends of these two fluids we have designated as the "Cro-Manganate" tints. As might be expected these blends are extremely unstable and must be used for matching within one or two hours after mixing.

Comparing blends of these with the nitrite test mentioned above, we found that the hue produced by a nitrite dilution representing 1 part of nitrogen in 10 million was matched by the standard "Cro-Manganate" blend, 15-1, diluted to 55%.

There still remained unsolved, a part of the original quest, which had started this line of color investigation: a search for standardized matches for caramel and for cudbear. The match for caramel is given above: but the curious reddish blue tint of cudbear had no match in the "Co-Fe-Cu" or the "Co-Cro-Cu" or even in the "Cro-Manganate" blends. The match has however been found and we take pleasure in reporting the news to the Association by whom the color standard work was entrusted to us.

The first step in the work of matching cudbear is to produce a standard cudbear solution of known strength representing a constant color value with any other cudbear solution of the same strength. The difficulty of this task lies in the fact that the official methods of preparing cudbear extracts and tinctures are extremely unsatisfactory, in that they do not produce anything like constant color results.

The only methods of preparation by which we were able to secure satisfactory results in constant color values, were the ones explained in detail by one of us in the *Journal of the American Pharmaceutical Association* for 1913, page 47. These are the *Alcohol-Chloroform-Acetone* and the *Chloroform-Acetone* extracts, both of which produce color values, when made into tinctures and diluted in exactly the same manner and quantity, which are fairly uniform in tinctorial power.

We had on hand some extract of cudbear, made by this method over two years ago. To 0.2 grammes of this was added 0.4 cubic centimeters of 10% ammonia water. Alcohol was then added to make a total volume of 200 cc. This tincture represented 1 part of the extract in 1000. Part of this was then diluted with water to a volume in which cudbear extract content was 1 part in 50,000. The result was a perfectly clear reddish violet liquid.

The Lovibond reading of this in a half-inch cell was as follows:

Red	*Yellow*	*Blue*
5.0 + 4.0 + 0.4	2.2	+2.0

We also prepared a dilution of cudbear representing 1 part in 50,000 from an old tincture prepared over two years ago from the *alcohol-chloroform-acetone* extract mentioned above. This liquid had been in a cork stoppered bottle during all that time: and while the dilution of this was not the same shade as the dilu-

tion of the freshly prepared tincture, still the liquid was perfectly clear. We made a Lovibond reading of it as follows:

Red	*Yellow*	*Blue*
5.0+1.8	—0.7	1.0+0.2

We now added one drop of 10% ammonia to this dilution and the color immediately changed to the standard reddish violet tint which was produced in the dilution from the fresh tincture. Note the difference in the Lovibond reading which we now give:

Red	*Yellow*	*Blue*
5.0+4.0+1.5	—2.5	+1.6

It will be seen that the total net color value after adding the ammonia closely approximates that of the fresh dilution of the same strength. It is not surprising that the color of this old tincture faded slightly during its two years standing in a cork stoppered bottle: but it was very gratifying to see that the original color returned on the addition of a small quantity of ammonia.

A standard color match was found for several of these cudbear samples: but we considered it advisable at this time to match only the dilution of what we consider our best cudbear tincture, where the cudbear content was 1 part of extract in 50,000.

We found that no blend could be obtained from either the "Co-Fe-Cu" or the "Co-Cro-Cu" lines of colored fluids that would properly match the cudbear hue. Even the permanganate-dichromate combination was of no avail in this case: but we found that by blending the potassium permanganate solution with our copper solution, we could get the desired result.

We finally found a practically perfect match by blending 10 volumes of N/400 potassium permanganate with 4 volumes of the half-normal acidulated copper sulphate solution. We found the Lovibond reading of this blend was as follows:

N/400 Mn	N/2 Cu	*Red*	*Yellow*	*Blue*
10	4	5.0+4.0	—1.9	0.7+0.2

We will give Lovibond readings of a few of the other blends which were examined, from which we selected the best match for the cudbear tint.

Lovibond readings all in ½ inch cells.

N/400 Mn	N/2 Cu	*Red*	*Yellow*	*Blue*
10	3	5.0+4.0	—1.8	+0.7
10	4	5.0+4.0	—1.9	0.7+0.2
10	5	5.0+3.0+0.2	—2.2	1.0
10	6	5.0+3.0	—2.0	1.3
N/300 Mn	N/2 Cu			
10	2	5.0+4.0+3.0+2.0+0.2	—3.5	none
10	3	5.0+4.0+2.0+0.7	—3.1	+0.4
10	4	5.0+4.0+1.6	—2.5	0.7+0.1

It must be borne in mind that while the "Co-Fe-Cu" tints are practically permanent and that the "Co-Cro-Cu" tints are stable for several weeks, those blends containing permanganate must be used within a half-hour after mixing.

Before leaving the subject of cudbear, we wish to again emphasize that the matching of this or any other color with our standard colored fluids is now merely a matter of routine work. We hope that others will become sufficiently

interested to check up our work, in order that uniformity in the color of pharmaceuticals ultimately obtain. We further predict that it will be only the matter of a few years before color standardization by methods similar to those we have devised will be given pharmacopœial recognition.

COLUMBIA UNIVERSITY COLLEGE OF PHARMACY, July, 1915.

ABSTRACT OF DISCUSSIONS.

Dr. Schneider: I want to ask Dr. Arny several questions. Does the thickness of the container have to be considered? What would you suggest as determining a recognizable difference in tint?

Dr. Arny: I might say, Mr. Chairman, it would facilitate matters if our friends will ask questions and I will answer them to the best of my ability when they have finished. I am also sorry that I have not a few copies of the Institute paper with me. The details will be found in that.

Dr. Turner: In preparing these colors by means of a colorimeter, is it necessary to come to an absolute match of colors, or will a slight difference of tint affect it enough to change the effect of the color?

Mr. J. U. Lloyd: This question of standard colors confronts us in whatever line of experimental demonstration we may engage. It confronts the botanist and especially the bacteriologist; it confronts the entomologist; it confronts all who attempt to make a description of a substance and describe the color so a person understandingly can get that color. Now, we know that the vegetable colors are, some of them, very permanent. I know that when I went to the Orient to study, that one of the subjects committed to me by the Department of Agriculture was to study the color used in Persia and Turkey in the making of the dyes used in coloring those carpets in the olden times. And I found there carpet that was unquestionably hundreds of years of age, back of Smyrna, carpets that were taken from the floors where they had been for hundreds of years unquestionably, with the colors as bright almost as the day they were made, and vegetable unquestionably. These people were so exceedingly careful concerning the origin of the dyes that they make, which seem to be empirical. Unfortunately the aniline dyes have crept into that country so now it seems the natural dyes of the olden times will be swept out. These vegetable dyes give the mellow shades of the Oriental carpet. These vegetable dyes I consider to be as permanent as any of the dyes we can make on the inorganic side. My brother who is a mycologist, has studied and devoted much of his time in the attempt to arrive at a method of making standard descriptions of the different colors in his line. You know how they are described, how weak some of the descriptions are, and the impossibility of setting them down in black and white. The lithograph man has been appealed to; the painter has been appealed to. It is almost impossible to get the standard shade. Now, there is one red I would like to ask Dr. Arny to think of. It is a vegetable red in the line of a standard acid color. That is the shade produced when sanguinarine is dissolved in sulphuric acid. I believe you have a red there you will find to be pretty nearly perfect, and that you can make almost any shade you desire by using the exact amount of sanguinarine dissolved in the exact amount of acid water. It is a very clear cut red, and red is a color that you have trouble with in using cudbear. I would like to have you try sanguinarine.

A Member: The average pharmacist is interested in making mixtures, so that in filling prescriptions the patient will not notice any difference in the color. I have found that the darker the color, even if it does not match the former one, the patient will not notice the difference. If the color is lighter, the least difference makes quite an impression on the patient.

Dr. Arny: I will answer the questions. As far as Dr. Schneider is concerned, he speaks of the thickness of the container. Of course, in matching the colors there are several ways it can be done. It can be done with the colorimeter. In my own work I have found that I have had satisfactory results by the use of Blake bottles. I started in on the work not to reach scientific exactness, but from the standpoint of matching colors in everyday pharmacy. We use the Blake bottle, holding about an ounce. I might say in our most exact work we use two Lovibond cells, each of which is uniform in thickness

On the subject of color, it is true that the darker the color is the less we can discern differences in shade in it. That is the reason why in delicate work we always use a half-normal solution, because we see distinctions more clearly in these than in stronger solutions.

Another point is the fact which may be in the mind of some of you, although you have not asked the question: "How do you know the uniformity of these colors?" All the work we have done in our laboratory during the past eight years has been handled as "unknowns." We take these Blake bottles and number them and put the solutions in, and I myself keep the record of them. Then I take a student and ask him to put them in the proper sequence, first the darkest and then the lighter. It is strange how close they can get to it. That opens the question which Dr. Schneider has asked about, the question of how far I can discern distinction on colors, and I am glad that question is asked.

I wish at this time to sound a warning (for it is needed) on the idea of doing quantitative analysis by colorimetric schemes. We recommend colorimetric tests only when the quantity of material to be tested is too small to assay gravimetrically or volumetrically. The sharpest discernable difference in color work is five per cent. We have one solution representing 1 part in 100; another 1 in 110 and another 1 in 90. Dozens of people coming in will put them in the proper sequence. If you have solutions 1 in 90, 1 in 95 and 1 in 100, it takes a fairly good eye to make the distinction, the eye of someone who has studied the subject. If you make then 1 in 92, 1 in 93, 1 in 94 and 1 in 95, nobody can tell. So the limitations of the colorimetric test is say 5 percent which is not, of course, exact scientific work.

The next was the question Dr. Turner asked. I don't know that I have that question exactly.

Dr. Turner: Whether it is necessary to match the color absolutely.

Dr. Arny: I will answer by saying that if we have two colored solutions, one consisting of 50 cc. of the cobalt solution, 4 cc. of the iron and 9 cc. of copper and the second made from 50 cc. of cobalt solution, 5 cc. of iron and 8 cc. of copper, the difference in the tints of these two fluids is easily discernable.

As far as Professor Lloyd's statements are concerned, I want to confirm all he says about the uselessness of lithograph work on color standardization. The first thing we did was to find out from the leading lithographers all we could about the subject and they told us that there is considerable difference between the fiftieth and the hundredth impression from the same plate. Therefore with the same ink they cannot guarantee the uniform coloring of successive impressions.

NOTES ON THE HISTOLOGY OF AN AMERICAN CANNABIS.*

C. W. BALLARD, A. M., PHAR. D.

There is a difference of opinion relative to the therapeutic value of foreign and native Cannabis; in this article their histological characters are compared.

A number of factors are responsible for the revival of interest in American Cannabis sativa. The foreign drug is apparently becoming less plentiful and is consequently increasing in price. Recent legislation has forced some manufacturers to use this drug in place of opium in their remedies. Last but most important is the accumulated data as to the therapeutic value of the native drug as compared with the foreign and although there is yet a lack of complete agreement among authorities, the weight of experimental evidence seems to indicate that preparations of American grown cannabis are almost, if not fully, as active therapeutically as those prepared from the foreign drug.

*Presented at Scientific Section, A. Ph. A., San Francisco meeting.

BOTANICAL CHARACTERS OF THE ENTIRE PLANT.

The sample upon which the following descriptive notes are based was received direct from a collector of crude drug materials. The entire herb with both pistillate and staminate flowers was gathered, so that positive identification and comparison with published botanical descriptions was possible. The foreign hemp being usually shipped in the form of agglutinated tops is not easily compared with descriptions appearing in botanical systems of classification. This sample of native hemp was compared with material furnished by the Bureau of

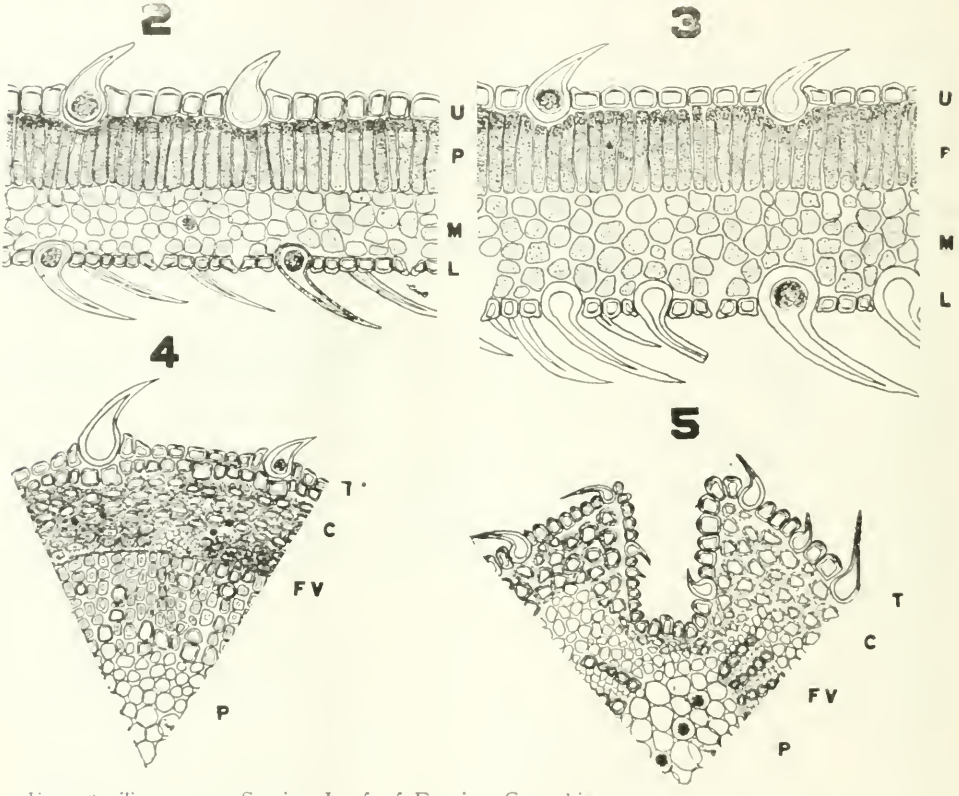


FIG. 2—Transverse Section Leaf of Foreign Cannabis.
U—Upper epidermis with trichomes.
P—Palisade tissue with chlorophyll granules.
M—Mesophyll with rosette crystals.
L—Lower epidermis with stoma and trichomes containing cystoliths.

FIG. 3—Transverse Section Leaf of American Cannabis.
U—Upper epidermis with trichomes.
P—Palisade tissue with chlorophyll granules.
M—Mesophyll with rosette crystals.
L—Lower epidermis with stoma and trichomes containing cystoliths.

FIG. 4—Transverse Section Inflorescense Stem Foreign Cannabis.
T—Epidermis with short trichomes.
C—Collenchymatic layer.
FV—Fibrovascular region
P—Pith.

FIG. 5—Transverse Section Petiole of American Cannabis.
T—Epidermis with short trichomes.
C—Collenchymatic layer.
FV—Fibrovascular region.
P—Pith.

Plant Industry of the U. S. Department of Agriculture, also with mounted specimens collected in Missouri and Monroe Co., Virginia. The latter specimens were from the Canby Herbarium of the New York College of Pharmacy. All of the above mentioned native specimens correspond with the following description published by Small in "Flora of the South Eastern United States."

"A coarse erect pubescent herb, annual. Leaves alternate or opposite, blades digitately divided into 5 linear or linear-lanceolate, serrate, acuminate segments, 4 to 15 cm. long. Petioles 2 to 8 cm. in length, stipules free and persistent. Staminate flowers in panicled racemes, the panicles being about as long as the subtending leaves. Calyx 4 to 5 mm. broad, consisting of 5 imbricated sepals, oblong or oval, pubescent and obtuse; corolla wanting. Stamens about as long as the sepals, 5 in number. Pistillate flowers in spikes found in the axils of the leafy bracts, having an entire perianth of calyx only, subtending a sessile one-celled ovary. Achenes oval-lenticular 4 to 5 mm. long, variegated, enclosed in the persistent perianth. Embryo curved."

COMPARISON OF THE TOPS OF FOREIGN AND NATIVE CANNABIS.

The tops of foreign cannabis are minutely described by the Pharmacopœia and the essential points of this description are here given.

"Dark green or brownish in color, densely branched panicles, the branches of which are compressed and agglutinated by resin into terete or flat masses; clothed with numerous sheathing bracts each containing two small mature but unfertilized pistillate flowers. In the powder few or no pollen grains or stone cells should be present."

The tops of Cannabis sativa native, as represented by my sample, present considerable variation in appearance from those of foreign drug and these differences are not only due to methods employed in preparing the latter drug for market but also to the habit of the native drug plant. We must bear in mind that the native drug is obtained from an uncultivated herb; the plant yielding the foreign has undoubtedly been somewhat modified by years of careful cultivation, also the tops of the latter are kneaded or worked into masses, while the native drug does not undergo such preparation. The tops and flowers of the native drug are colored a light green instead of the usual brown tint of the foreign.

HISTOLOGICAL CHARACTERS OF FOREIGN AND NATIVE CANNABIS.

For purposes of contrast we may briefly review the histological characters of foreign cannabis, the only variety admissible under present standards. The cellular elements and contents present are:

1. Many curved unicellular trichomes often containing cystoliths of calcium carbonate in the enlarged basal portion of the cavity, margin of the trichome smooth or nearly so, trichomes of two varieties, one of which is short but very broad, derived from the stem and upper leaf epidermis; the other being longer and narrower found on the lower leaf epidermis.
2. Glandular trichomes having a short many-celled petiole.
3. Epidermal tissue of polygonal or wavy cells, the lower epidermis having stoma.
4. Parenchyma or mesophyll containing resin masses, chlorophyll granules and numerous rosette crystals.
5. Small amounts of fibrovascular tissue consisting of thin walled fibers and spiral vessels.

The Cannabis americana of the Fifth Revision of the Pharmacopœia con-

sists of flowering tops, and no designation of pistillate or staminate flowers appears. Even in that edition of the Pharmacopœia the pistillate tops only of foreign hemp are designated as official. As the sample described was in the form of the entire herb, we may for convenience divide the cellular elements into those derived from the leafy stems and those from the tops.

Stem Elements.—The smaller stems of native cannabis are five to six angled with distinct furrows on the flat sides. The larger stems and those immediately adjacent to the root are circular in outline. In general they are not as stout as the stems of the foreign drug. The upper portions of both have a distinctly hispid surface and it is disagreeable to draw the finger over them, but the native is by far the rougher. The petioles of the leaves have a deep furrow on the upper surface. As stems make up a large portion of the sample submitted, we naturally find large amounts of fibrovascular tissue in the form of long thin-walled fibers with spiral and reticulate vessels. On transverse section the stems of the native drug are found to consist of epidermis armed with numerous short, very rough and stout trichomes; below this is a well defined collenchymatic layer which completely surrounds the fibrovascular elements. In the center is a small pith region the cells of which contain numerous crystals of the rosette type. Transverse sections of the stems of foreign drug exhibit the same elements as the native but there is less collenchyma, fewer and smoother trichomes on the epidermis and a larger pith. The foreign drug has a much greater amount of resin in the form of irregular masses occurring in the parenchyma cells.

The tissue elements of the leaves were very prominent in the powder prepared from the sample under consideration. Such an increase in the amount of leaf tissue might explain the increased number of protective trichomes present in the sample. Transverse sections of the leaf of the native drug show that it has the greater number of protective trichomes on the lower surface, is a thicker leaf and contains less resin than the foreign. The number of glandular trichomes is about equal in the two powders. The chlorophyll granules of the native drug are large and bright green.

Tops of Native Cannabis.—The histological differences in powders prepared solely from the tops of foreign cannabis and from those of the sample submitted were fully as striking as the differences in appearance of the drugs in the whole condition. The most apparent feature of the powdered American tops is the abundance of pollen. In a powder of foreign cannabis any abundance of pollen would indicate careless cultivation or gathering and would cause the rejection of the sample on the ground that official drug is defined as consisting of pistillate tops only. Unicellular trichomes of both short and long varieties are found in greater number in the native sample. This difference might be expected when one considers that the native drug is not gathered from cultivated plants as we have other instances where care and cultivation seem to lessen the necessity for protection afforded by trichomes. There are several minor differences in the trichomes of stem and leaf in the two drugs. The trichomes of the tops and more especially the stems of native drug are apt to be more papillate or rough surfaced. In some cases this roughening is so marked as to give the hair a surface appearance similar to that of senna. The cavities of the trichomes of native hemp are smaller than those of the foreign and the cystoliths in the basal portion

are not as numerous. Some of the trichomes of the native drug are but rudimentary appearing as mere papillae.

SUMMARY

American Sample	*Foreign Sample*
Pollen Large quantity	very scarce
Trichomes	
number—great	great
surface—very rough	less roughened
size—large and small in equal quantity	more large than small
cavity—small at base	large at base
papillae—on leaf surfaces and stem epidermis	few
Leaf tissue great amount	moderate quantities
Mesophyll bright green	brownish green
Fibrovascular tissue large in amount	small in amount

We must realize that the fragmentary notes here presented are open to review and enlargement. A complete treatment of the subject of Cannabis sativa would require investigation of the slight differences in botanical and histological structure not only of a few samples of the two drugs but of many specimens from as wide a range of territory as possible. If the materials for such a study were available we would undoubtedly find many minor differences resulting from climatic conditions.

COLUMBIA UNIVERSITY, COLLEGE OF PHARMACY.

THE CULTIVATION OF MEDICINAL PLANTS WITH OBSERVATION CONCERNING CANNABIS.*

L. E. SAYRE.

The Author dwells upon the importance of cultivation of medicinal plants in the United States. He has recently traveled in the South and refers to the advantages of Georgia's climate and soil for medicinal plant cultivation and the advantageous location of experiment stations of that State. The Author refers to some experimental work at Glenolden and states that despite contrary statements, Cannabis is an important and reliable drug.

One of the first experiments in the cultivation of medicinal plants in the United States on which the author was in position to make some personal observations was about the year 1887 when a friend of his (Mr. C. B. Allaire) had received through Dr. E. R. Squibb some genuine Trieste seed of the official fruit, colocynth. Mr. Allaire kindly asked the writer's co-operation in the experimental research—he to cultivate the plant (near Albuquerque), and the writer to make an analysis of the fruit product when it had matured. To the writer's surprise a barrel of this fruit was received which was nearly as large as a small water melon. This enormous size, it was found, was due to hybridization. Mr. Allaire had not taken the proper precaution to isolate the colocynth patch. It had been

*Read before Scientific Section, A. Ph. A., San Francisco meeting.

located too closely to a garden plat of water melons. On analysis, the fruit proved to be less bitter than the official fruit; proportionately diluted.

Since this time the writer has taken much interest in the cultivation of medicinal plants and while he has not done much in an agricultural way he has watched with intense concern the experimental work in the Bureau of Plant Industry in Washington and the individual efforts of others. Professor Schneider of San Francisco has reported his work in cultivating belladonna on an extensive scale. We have examined the leaves and roots of the plants from his field and found them remarkably rich in alkaloidal content. Our own native stramonium, without special cultivation, has been repeatedly examined and reported upon by us as furnishing the official alkaloidal requirement. It is needless to give further detail to show that the writer's interest is more than academic.

During the past summer the writer has had a splendid opportunity of making certain observations in connection with this subject which through the persuasion of a committee of this Section of the American Pharmaceutical Association, he has been induced to record in its proceedings, or in other words, to present a paper upon it.

It has been repeatedly stated, by various writers in our pharmaceutical journals, that now is the opportune time for a special effort to be made in this country to make itself, as far as possible, independent of foreign supply and to encourage home production of plants producing remedial agents.

During the past summer it has been the writer's privilege to study a section of the South which seems to him especially favorable for this purpose. I refer to the section included in an area which lies around and about Atlanta, Macon, and Savannah. Doubtless many other adjacent positions may be as favorable for the above purpose. Traveling through this district (mostly on wheels however) the writer has been very much impressed with the immense variety of plants, of different orders, growing wild there and of the splendid system of Georgia in distributing experimental farms at advantageous geographical intervals throughout the State. This system, in this section, if taken advantage of, in such a way as to include medicinal plants would doubtless lead to favorable economic resu'ts. In spite of all that has been said to discourage this enterprise in this country, it seems we should do something, as an Association to promote this growing need.

This idea receives substantial support when we observe, for instance, that one of our large manufacturing chemists, encouraged by former experimentation, in Philadelphia, has now under cultivation several acres of medicinal plants, such as belladonna, digitalis, hyoscyamus and cannabis. At Glenolden, Pa., the writer had the opportunity of seeing these fields of medicinal plants growing vigorously. Doubtless there are many other sections where this enterprise has been started and developed, and since this is the case, it wou'd be wise for this Section of our Association to have a committee whose object it would be to collect statistics, to foster and promote the praiseworthy object, and to furnish reliable information as to possibilities in medicinal plant culture in this country. This information may be had for the asking and those who are engaged in this form of plant culture would be only too glad to contribute to the common fund of

information. The plea we would make, then, would be for a proper organization of promoting this work in the line above indicated.

In connection with the subject of plant culture, attention is naturally directed to the fact that there is a growing tendency to discard this class of plant remedial agents. Recently there was a circular letter sent out by the Council of Pharmacy and Chemistry of the American Medical Association, which urged the discontinuance of cannabis as a useful drug on account of its alleged variableness in quality and uncertainty of action. On this point we wish to call attention to the fact that cannabis, (both the C. Indica and Americana) do not by physiological test give any greater variation than the other prominent potent drugs.

Quoting from reliable published statements we would cite the results of Pittenger (see his book Biochemic Drug Methods, page 6). Adding thereto we have the following instructive tables recording more recent unpublished results:

The following table shows the comparative results of both the physiologic and chemic assay of the three varieties of Cannabis:

TABLE NO. I.

CANNABIS INDICA		CANNABIS AFRICANA		CANNABIS AMERICANA	
Chemical Assay	Phys. Assay	Chemical Assay	Phys. Assay	Chemical Assay	Phys. Assay
12.2% resin		10.6% resin	100%	6.4% resin	133%
12.7% resin		16.7% resin	133%	14.4% resin	100%
14.2% resin	100%	14.2% resin	133%	14.1% resin	100%
12.8% resin	100%	8.6% resin	100%	8.5% resin	114%
13.0% resin	80%	10. % resin	133%	10.8% resin	260%
13.4% resin	66%	17.5% resin	20%	8.5% resin	200%
98.7% resin	125%	18.8% resin	100%		133%
	200%	17.8% resin	80%		133%
	266%		200%		
13.2% resin	133%			16.2% resin	200%
94.6% resin	166%				200%
12.0% resin	200%				100%
	133%				133%
	133%			16.8% resin	133%
13.0% resin	133%				80%
	133%				150%
	220%				133%
	160%				200%
	80%				66%
12.0% resin	400%				200%
12.0% resin	400%				90%
11.4% resin	100%				160%
9.9% resin	125%				100%
					133%
				10.8% resin	200%
				10.8% resin	260%
				8.5% resin	114%

TABLE NO. II.

Drug	Number of Samples Assayed	Variation Percentage
Digitalis tincture	51	30 to 444
Ergot fluidextract	17	0 to 310
Aconite leaves tincture	6	38 to 111
Aconite root tincture	12	33 to 363
Cannabis indica fluidextract	15	40 to 150
Gelsemium tincture	7	64 to 156
Strophanthus tincture	12	55 to 277
Squill fluidextract	13	71 to 153

It can readily be seen therefore that while Digitalis varies in activities from 30 to 444% and Ergot from 0 to 310% the two tables show a variation in the Indian and American varieties of Cannabis of only 66 to 260%. There was only one sample of Cannabis which ran below 66% and that was of the African variety which is not very extensively used in this country.

Table No. 2, however(shows only the variation found in drugs which cannot be satisfactorily standardized chemically. It would be wise to include a table showing the variation found in drugs for which we have good chemical methods of assay.

The following table taken from the Proceedings of the Pennsylvania Pharmaceutical Association 1914, page 160, shows the results of 286 crude drug assays made by the same pharmacologist:

Drug	No. of Samples	Lowest Assay	Highest Assay	Average		Standard	Number Below Standard	Number Above Standard
Aconite leaf	1	0.362	0.362	0.362	0.2 %	Ether Sol. Alk.	1	0
Aconite root	8	0.297	0.784	0.490	0.5 %	Ether Sol. Alk.	4	4
Belladonna leaf	16	0.364	0.608	0.490	0.3 %	Mydriatic Alk.	16	0
Belladonna root	22	0.410	0.700	0.543	0.45%	Mydriatic Alk.	19	3
Calabar bean	7	0.079	0.130	0.109	0.15%	Ether Sol. Alk.	0	7
Cannabis Indica	1	13.0	13.0	13.0	10. %	Resin	1	0
Cantharides Russian	5	0.75	1.06	0.91	0.6 %	Cantharidin	5	0
Capsicum	15	13.0	18.0	16.0	10. %	Oleoresin	15	0
Cinchona yellow	10	5.29	9.13	6.69	5. %	Total Anhyd. Alk.	10	0
Cinchona red	14	6.83	10.18	8.35	5. %	Total Anhyd. Alk.	14	0
Coca leaf	10	0.594	1.15	0.846	0.5 %	Ether Sol. Alk.	10	0
Colchicum seed	6	0.52	1.00	0.687	0.45%	Colchicine	6	0
Conium	1	0.65	0.65	0.65	0.5 %	Coniine	1	0
Cubebs	6	13.9	19.8	16.9	15. %	Oleoresin	5	1
Digitalis	1	0.356	0.356	0.356	0.25%	Digitoxin	1	0
Ergot	4	0.18	0.31	0.25	0.15%	Cornutine	4	0
Gelsemium	8	0.342	0.658	0.515	0.4 %	Alkaloids	7	1
Ginger African	3	8.50	9.61	9.00	6. %	Oleoresin	3	0
Ginger Jamaica	3	4.33	5.75	5.06	4. %	Oleoresin	3	0
Hyoscyamus	14	0.0382	0.110	0.0692	0.08%	Mydriatic Alk.	6	8
Hydrastis	2	3.22	3.42	3.32	2.5 %	Hydrastine	2	0
Ignatia	3	1.32	1.83	1.56	1.5 %	Total Alkaloids	2	1
Ipecac, whole	15	0.950	2.36	1.78	1.75%	Alkaloids	11	4
Ipecac, powder	8	1.31	2.52	2.14	1.75%	Alkaloids	7	1
Ipecac, dried	1	2.49	2.49	2.49	1.75%	Alkaloids	1	0
Jalap	13	5.07	9.21	6.62	7. %	Total resin	3	10
Kola nut, dried	9	1.09	1.78	1.42	1. %	Alkaloids	9	0
Lobelia	1	0.838	0.838	0.838	0.5 %	Alkaloids	1	0
Male Fern	4	6.85	10.12	8.23	6. %	Oleoresin	4	0
Nux Vomica	18	0.46	1.33	0.838	1.25%	Strychnine	2	16
Opium	6	10.13	11.78	11.05	9. %	Crys. morphine	6	0
Opium, powder	11	11.80	12.67	12.20	12-12.5 %	Crys. morphine	9	2
Pilocarpus	4	0.303	0.948	0.484	0.5 %	Alkaloids	3	1
Podophyllum	8	2.67	5.30	3.47	4 %	Resin	2	6
Sanguinaria	11	3.28	6.84	4.94	2.5 %	Alkaloids	11	0
Stramonium leaf	11	0.304	0.520	0.404	0.25%	Mydriatic Alk.	11	0
Veratrum	6	1.30	2.14	1.74	1. %	Alkaloids	6	0
							221	65

It will be noted from the tables that,

16 samples of Belladonna leaf varied in strength from 121.0% to 200.0%.
22 samples of Belladonna root varied in strength from 91.1% to 155.5%.
10 samples of Cinchona yellow varied in strength from 105.8% to 182.6%.
14 samples of Cinchona red varied in strength from 136.6% to 203.0%.
10 samples of Coca leaf varied in strength from 118.8% to 230.0%.
6 samples of Colchicum seed varied in strength from 115.5% to 222.2%.
8 samples of Gelsemium varied in strength from 85.5% to 164.5%.
14 samples of Hyocyamus varied in strength from 47.7% to 137.5%.
15 samples of Ipecac, whole, varied in strength from 54.2% to 135.0%.
8 samples of Ipecac, powdered, varied in strength from 76.6% to 144.0%.
13 samples of Jalap varied in strength from 72.4% to 132.0%.
18 samples of Nux Vomica varied in strength from 36.8% to 106.4%.
4 samples of Pilocarpus varied in strength from 60.6% to 189.6%.
8 samples of Podophyllum varied in strength from 66.7% to 132.0%.
11 samples of Sanguinaria varied in strength from 131.2% to 273%.
11 samples of Stramonium leaf varied in strength from 121.6% to 208.0%.
6 samples of Veratrum varied in strength from 130.0% to 214.0%.

According to the tables, it would appear that Cannabis sativa is no more variable than many of the other drugs of the Pharmacopoeia.

A detailed outline of the methods which were employed for physiologically standardizing Cannabis and its preparations is given on pages 97 and 102 of the volume mentioned.

It is needless to say that any effort to discontinue a drug or remedial agent will be of little avail if that drug proves itself useful and important in the hands of physicians who obtain favorable clinical results from its use.

Drugs are sometimes useful to those only who know how and when to use them, and, those who have had favorable experience with them as "tools," in the treatment of disease cannot be dissuaded from their use by the mere dictum of any medical or pharmaceutical body.

A BIOLOGICAL TEST FOR ARSENIC*

ALBERT SCHNEIDER.

The test for arsenic about to be described is not new as it has been used in Germany and other European countries for some time. It is, however, quite new to American laboratory workers and is hereby given for the benefit of those who are not familiar with it.

Arsenic is widely distributed in nature and is extensively used in the arts and industries. Medicinally it is a popular tonic and it is also much used as an insecticide in the form of sprays and washes. Animal hides are frequently preserved by arsenic, which accounts for the presence of this powerful poison in glues and gelatins made from such hides. Fruits and vegetables which have been sprayed with arsenical compounds for the purpose of destroying insect pests, may contain enough of this substance to produce symptoms of poisoning. Arsenic is occasionally added to alcoholic beverages to give them a tonic effect. It has been demonstrated that very minute amounts of arsenic are normally present in various organs of the human body, as the thyroid gland, the thymus

* Presented in Scientific Section A. Ph. A., San Francisco meeting.

gland and liver, although some investigators question the correctness of this claim. However these somewhat problematical traces of arsenic in organs of the human body and also in the organs of other animals need not concern the routine laboratory workers.

As a rule, the tests for arsenic outlined in the majority of texts are chemical and hence this work is usually relegated to the chemical laboratory. Within recent years attempts have been made to employ biological tests for determining the presence of arsenic in food substances based upon the discovery that certain molds when growing in substances containing arsenic will give rise to garlic-like odors.

Gosio demonstrated that certain molds grown in and upon media containing very minute quantities of arsenic gave rise to gaseous compounds characterized by a garlic-like odor. Seven different species of molds are said to have this power, more especially *Penicillium brevicaule*, which Gosio isolated from the air and which he frequently found on decomposing paper. Crumbs of bread (wheaten) form the best culture medium for this mold and the incubation is done at a temperature of from 28° to 32° C., a vigorous growth being produced within 24 hours. In the presence of not more than 0.00001 gram of arsenic in such culture there will be noticeable a distinct and very characteristic garlicky odor which may persist for months, if the culture is not killed. These arsenic molds do not produce garlic odors with sulphur, phosphorus, antimony, boron and bismuth compounds but they do have the power of converting selenium and tellurium compounds into volatile substances having the garlic-like odor. The following is the method of procedure in making the test:

If the material to be examined is liquid, let the dry bread crumbs (either white or graham) absorb it to saturation, and then scatter a small quantity of fine crumbs over the surface. If the material to be tested is solid, grind or cut it into small pieces and mix with an equal amount of bread crumbs and then moisten with a little sterile distilled water. Place the prepared material in sterile flasks of suitable size and plug with sterile cotton. Sterilize the flask and contents by the usual fractional method at 100° C., or for 30 minutes in the autoclave. Absolute sterilization must be secured. There is no danger of volatilizing the arsenic at these temperatures. As soon as the flask and contents are cold, inoculate with the mold, as follows: The mold cultures may be grown on bread or on pieces of potato. Remove a small quantity of the mold in the spore-forming stage and mix with peptone salt solution or sterilized water. Add enough of this mold suspension to moisten the bread in the flask. Do not add more of the spore-bearing material than the mass (bread and arsenical substance) in the flask will absorb, as too much moisture will retard the growth of the fungus. Cover the inoculated flask with a rubber cap and incubate at a temperature of 37° C., although the ordinary room temperature will answer the purpose. As soon as the growth is clearly visible to the naked eye, which may be within 24 hours, the characteristic garlic odor will be noticeable on opening the flask. If no odor is appreciable, again seal and incubate for another 24 hours or longer. In case the substances to be tested are strongly acid, they may first be neutralized by means of calcium carbonate. It must be kept in mind that *Penicillium brevicaule*, as well as other molds, will convert tellurium

and selenium compounds into volatile substances having a garlic-like odor. The arsenic and tellurium odors are closely similar but that from selenium is somewhat different in quality, more like that of mercaptan. The test is extremely delicate, 0.00001 gram of arsenic can be recognized with certainty. A solution of 0.00001 gram of potassium tellurite in 10 cc. of mold infested gelatin medium, in a cotton plugged test tube, gave out a strong odor of garlic for several weeks.

Bigineili ascertained that the gases formed by *Penicillium brevicaule* in arsenical cultures were completely absorbed by solutions of mercuric chloride with the formation of a double compound of mercuric chloride and diethyl arsine which is quite easily decomposed, accompanied by the reappearance of the garlic odor. The test is unlimited in its application and will respond in the presence of all manner of organic substances and bacterial contamination. It is far more delicate than any of the chemical tests for arsenic and can be carried out in much shorter time.



FRANK. H. FREERICKS,
Chairman of Section on Education and Legislation.



H. P. HYNSON,
Chairman House of Delegates.

In the October issue, page 1167, error was made in announcing Mr. R. S. Lehman instead of Mr. Freericks as Chairman of the Section on Education and Legislation. Mr. Lehman is Chairman of the Section on Commercial Interests.

Section on Education and Legislation

Papers Presented at the Sixty-Third Annual Convention

MINUTES OF THE PROCEEDINGS OF THE FIRST SEPARATE SESSION OF THE SECTION ON EDUCATION AND LEGISLATION.*

The first separate session of the Section on Education and Legislation was held in the Red Room of the Bellevue hotel, San Francisco, on Thursday, August 12, beginning at 11 o'clock a. m.

Chairman F. H. Freericks presided and in the absence of Secretary R. A. Kuever, Professor Edwin L. Newcomb acted as secretary pro tem.

Chairman Freericks in opening the meeting said:

You will all remember that the joint session of this Section and the Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy was held Wednesday morning, so that we will now take up in order that part of the program which is scheduled for Thursday morning at 11 a. m., instead of as it appears on the program.

With your permission I should like to present the Secretary's Address, which is a statistical report very largely, and the purposes of which, I believe, would be satisfied by a mere reading of the title.

It was then moved by Prof. H. V. Arny and seconded by Dr. W. C. Anderson that the Secretary's Report be referred to the Publication Committee, which motion was carried.

REPORT OF SECRETARY KUEVER.

The by-laws of our Section prescribe, as one of the duties of the Secretary, the compiling of an annual report. This report, when properly made, should embrace all the progress in legislative and educational matters; it reports, pharmaceutically speaking, all educational advances and legislative changes in such a way that it becomes a permanent record and a part of the proceedings of each convention of the American Pharmaceutical Association.

In keeping with the usual custom, your Secretary has this year, divided his report into two sub-heads, Educational Advances and Legislative Changes, and has sub-divided each of these according to the states, alphabetically arranged, in which the changes have been enacted and according to the schools in which educational advances have been adopted.

An effort has been made to make this report complete, covering every institution of pharmaceutical learning and every state, but owing to the lack of a few responses from some of the schools of pharmacy it may possibly be that not all educational advances are here recorded. From a few states it was impossible to obtain authentic reports regarding legislative changes even after several letters were sent to the Secretary of the State Association and other pharmacists in the state.

It is interesting to note, in this connection, that Wyoming is the only state in the Union in which there is no state pharmaceutical association at the present time.

*Papers read before the Sections will be accompanied by the discussions and are therefore omitted from the minutes.

Your Secretary desires to make one suggestion and that is that the by-laws of this Section be amended at this convention to read that the Secretary shall be elected for a term of two years in place of one. It is very evident that a Secretary serving two consecutive years, because of the way in which our state legislatures meet, the variance of the time of the year when the various state associations convene, and the gradual nature of the changes in educational advances, can be of a great deal more service than can a new man, much less familiar with the work, who is chosen annually.

EDUCATIONAL ADVANCES.

According to the last issue of the hand book of the State of New York there are eighty-two schools of pharmacy in the United States. Forty-five are classed as registered schools and thirty-seven as accredited institutions. Of these eighty-two schools the following three have been discontinued during the fiscal year.

(1) School of Pharmacy, Medical Department, Texas Christian University, Fort Worth, Texas. The last class was graduated in 1914.

(2) College of Pharmacy, New Orleans University, New Orleans, La. The last class was graduated in 1915 and arrangements have been made whereby the undergraduate students will continue their work at Meharry Pharmaceutical College, Nashville, Tennessee, during the ensuing year.

(3) Department of Pharmacy, Starling-Ohio Medical College, was merged with the College of Pharmacy of Ohio State University during July, 1914.

The following schools of pharmacy, twenty-seven in number, report that no specific educational advances, either in entrance requirements or curriculum, has been adopted during the past year. In a few cases the former would hardly be possible since four years of preparatory work is already required for entrance. In the majority of cases, however, the requirements are exceedingly low—being but one year of high school work.

The schools are here arranged with regard to their entrance requirements.

I. Those having a minimum entrance requirement of one year of high school work:

(1) Kansas City College of Pharmacy and Natural Science.
(2) New Orleans College of Pharmacy.
(3) Louisville College of Pharmacy.
(4) Toledo University College of Pharmacy.
(5) College of Pharmacy of the Birmingham Medical College for the Pharmaceutical Graduate degree.
(6) Central States College of Pharmacy.
(7) College of Jersey City, Department of Pharmacy.
(8) Albany College of Pharmacy.
(9) Southern College of Pharmacy.
(10) University of Tennessee School of Pharmacy.

II. Those having a minimum entrance requirement of two years of high school work.

(1) Medico-Chirurgical College of Philadelphia, Department of Pharmacy.
(2) School of Pharmacy, University of Oklahoma, for the Pharmaceutical Graduate degree.
(3) Meharry Pharmaceutical College, the two years must include one year each of Latin and physics.
(4) Pittsburgh College of Pharmacy, after 1916-17.
(5) Marquette University, School of Pharmacy, for the Pharmaceutical Graduate degree. The registrar of this institution says, "Wisconsin is a backward state in pharmaceutical legislation. Young men need attend no pharmacy school in order to be eligible to the State Board examination. We are still compelled to give 'Short Courses' in pharmacy. We had sixty-six such students last session."

(6) The State College of Washington, for the Pharmaceutical Graduate degree.

(7) North Dakota Agricultural College, School of Pharmacy.

(8) Cincinnati College of Pharmacy.

(9) School of Pharmacy of the University of Alabama.

III. Those having a minimum entrance requirement of three years of high school work:

(1) School of Pharmacy, University of Oklahoma for the Pharmaceutical Chemist and Bachelor of Science degrees.

(2) Tulane School of Pharmacy.

(3) National College of Pharmacy.

IV. Those having a minimum entrance requirement of four years of high school work:

(1) Marquette University, School of Pharmacy for the Pharmaceutical Chemist and Bachelor of Science degrees.

(2) College of Pharmacy of the Birmingham Medical College for the Pharmaceutical Chemist and Bachelor of Science and Doctor in Pharmacy degrees.

(3) Purdue University, School of Pharmacy.

(4) University of Washington College of Pharmacy.

(5) The State College of Washington for the Bachelor of Science in Pharmacy degree.

The following schools of pharmacy, nineteen in number, have adopted educational advances during the past fiscal year. Some are reporting increases in entrance requirements, some have lengthened or added to their curriculum and others have done both.

These schools are arranged with reference to their entrance requirements.

I. Those which have required one year of preparatory work for admission:

(1) Pittsburgh College of Pharmacy. In 1917-18 two years of high school work will be required.

(2) Massachusetts College of Pharmacy. In 1917-18 two years of high school work will be required.

(3) Medical College of the State of South Carolina School of Pharmacy. The teaching of pharmacology, in the senior year, has been added to the course of study.

(4) Temple University, Department of Pharmacy. A course of Homeopathic pharmacy consisting of six lectures and six laboratory periods has been added.

(5) Buffalo College of Pharmacy. Two hours weekly of senior pharmacy laboratory work and one hour weekly of the pharmacognosy of powdered drugs has been added.

(6) Creighton University College of Pharmacy. The course of study has been increased from fourteen to sixteen months.

(7) School of Pharmacy, Medical College of Virginia. This institution requires one year of high school work for the Pharmaceutical Graduate degree. A new course has been established leading to the Pharmaceutical Chemist degree for which four years of high school work is required.

(8) Howard University Pharmaceutic College will require two years of high school work including one year of Latin.

(9) Cleveland School of Pharmacy has added one year of high school work, requiring for the coming year two years for entrance.

(10) Northwestern University, School of Pharmacy, has lengthened its courses to eight and one-half months in each year.

II. Those which have required two years of preparatory work for admission:

(1) University of Illinois, School of Pharmacy requires two years of high school work for the Pharmaceutical Graduate degree and four years for the Pharmaceutical Chemist degree. Beginning with the session 1916-17 four years will be required for entrance to the course leading to the degree Pharmaceutical Graduate.

(2) Brooklyn College of Pharmacy. The Pharmaceutical Doctor degree formerly given for three years of work with thirty regents counts will hereafter be given after six years of instruction and an entrance requirement of sixty regents counts. The Pharmaceutical Chemist degree is now given for three years course with sixty regents counts for admission. The Master of Pharmacy degree is now given for three years of work with thirty regents counts as entrance requirements.

(3) Department of Pharmacy, University of Mississippi. A three years course has been added leading to the degree Pharmaceutical Chemist. Four years of high school work is required for admission.

(4) California College of Pharmacy. A system of reporting laboratory work in chemistry and materia medica has been adopted. A new botanic garden has been established.

(5) University of Montana, School of Pharmacy. Requirements for the three years course, degree Pharmaceutical Chemist, are advanced to four years of high school work. Requirements for two years course, degree Pharmaceutical Graduate, are advanced to three years of high school work with the following provisions: Students of mature age, with drug store experience, may be admitted on presentation of seven and a half units. Special students who must be twenty-one years of age, and not candidates for a degree, are admitted without entrance requirements.

III. Those which have required two years of preparatory work for admission:

(1) College of Pharmacy, University of Nebraska. By act of the Nebraska legislature the School of Pharmacy was made a College of Pharmacy.

(2) College of Pharmacy, State University of Iowa. Four years of high school work is the minimum entrance requirements to both courses for Pharmaceutical Graduate and Pharmaceutical Chemist degrees. A four years course leading to the degree, Bachelor of Science in Pharmacy, is being established.

(3) School of Pharmacy, Vanderbilt University, has added more work to the course leading to the Pharmaceutical Chemist degree. Arrangements have been made whereby the degrees Bachelor of Science and Pharmaceutical Chemist may be taken together in a five years course.

(4) College of Pharmacy, University of Minnesota, has adopted a three year minimum course of pharmaceutical instruction to go into effect 1916-17. In educational advances, therefore, this institution leads the schools of pharmacy in this country.

LEGISLATIVE CHANGES.

During the past fiscal year there have been a great many legislative changes affecting the profession of pharmacy. For this, two reasons may be given: The large number of General Assemblies in the odd numbered years and the unusually important Federal legislation passed by Congress. As an example, in many states, narcotic laws have been enacted which conform to the Harrison law, and so on.

At the time this report is being compiled there are still a few legislatures in session or bills in the hands of Governors and hence this report may not be entirely complete.

In the following legislative summary the states are arranged alphabetically regardless of whether or not any legislative changes have occurred. Because of the vast amount of legislative material the summary is made as brief as possible.

ALABAMA: The legislature convenes during the month of July, hence is in

session at present. The state association is attempting to secure some pharmaceutical legislation during the present session.

ARIZONA: No change in the laws affecting pharmacy since 1913.

CALIFORNIA: Three bills affecting pharmacy are in the hands of the Governor.

COLORADO: Two laws were passed:

I. A prohibition law which allows, under certain restrictions, the dispensing of not more than four ounces of liquor on a prescription.

II. A narcotic law which supplements the Harrison law and places a limit upon the amount of the various drugs that may be dispensed on one prescription. It also requires that the prescription shall bear the physician's state license number as well as his federal registry number, and further, that the prescription must be filled not later than ten days after the date on which it has been written.

DELAWARE: There were no laws affecting pharmacy passed during the last session of the legislature in this state.

DISTRICT OF COLUMBIA: During the past fiscal year there has been no congressional legislation for the District of Columbia which affects pharmacy.

FLORIDA: Several changes affecting the general practice of pharmacy and also a new narcotic law were enacted.

GEORGIA: Legislature is in session now. So far no pharmaceutical legislative changes have been attempted.

IDAHO: During the last session only one change was made in the pharmacy law. The number of the bill making this change was House Bill No. 249, by Ellrod. This law repeals several sections relative to the sale of certain narcotic drugs and substitutes more in uniformity with the Federal narcotic act.

ILLINOIS: General Assembly in session. Several bills affecting the pharmaceutical profession are pending.

IOWA: Several very important bills were passed.

I. The Barmmer-Jackson bill which amends the Pure Drug act so that everybody handling drugs or medicines (including physicians) must comply with its provisions and be subject to inspection by the commission of pharmacy.

II. The Becker-Taylor bill which amends the present law so that the State Board may prosecute violations without having to prove a specific sale in each case. Convictions under the old law were difficult to obtain because of the lack of evidence.

III. Anti-narcotic legislation was secured by obtaining amendments to different sections of the present statutes instead of passing an entirely new act. The state law was amended so that violations of the national act would be punished by state officials.

IV. A law was enacted which places the Board of Examiners on a salary and the state has been divided into three districts, with one member of the Board in each district for which he is responsible so far as the enforcement of law is concerned.

KENTUCKY: No General Assembly in this state this year.

MAINE: There were no changes enacted into the pharmaceutical law at the last session of the legislature.

MARYLAND: An anti-narcotic law was enacted which goes into effect June 1st, 1916.

MASSACHUSETTS: This state has had four very important changes which are as follows:

I. Chapter 200, General Acts 1915, provides that it is optional with local licensing authorities whether or not any licenses to sell intoxicating liquor shall be granted to druggists in their respective cities and towns, by changing the word "shall" to "may" in Section 22, Chapter 100 of the Revised laws.

II. Chapter 104, of the General Acts of 1915, Chapter 495 of the Acts of the year 1910 is hereby amended by striking out Section 2 and inserting in place thereof: Section 2, The analyst, or an assistant analyst of the State Department

of Health shall, upon request, furnish a signed certificate under oath of the result of the analysis provided for in Section 1 to any police officer or any agent of an incorporated charitable organization and the presentation of such certificate to the court by any police officer or agent of any organization shall be prima facie evidence that all the requirements and provisions of Section 1 have been duly complied with. This certificate shall be sworn to before a justice of the peace or notary public, and the jurat shall contain an allegation that the subscriber is the analyst or an assistant analyst, and of the fact that he is such.

III. Chapter 187, of the General Acts of 1915 makes the State narcotic law conform with the Harrison Act. It contains all the requirements of the United States law but is a little more stringent.

IV. Chapter 159, of the General Acts of 1915 relates to the issuing of search warrants for narcotic drugs.

MICHIGAN: Only one change was made in this State which was the modifying of the narcotic law so that it would not conflict with the Harrison law.

MONTANA: An entirely new and revised pharmaceutical law was enacted which goes into effect July 1st, 1915. It embraces nothing, however, that some other States do not have. The important changes were: (1) fees for examination raised from $5 to $15; (2) Secretary's salary increased from $150 to $600; (3) reciprocity granted to those complying with the requirements set forth by the Board of Examiners; (4) that paragraph of the old law wherein towns of less than 500 inhabitants were not governed by the pharmacy law was stricken out.

NEBRASKA: Revision of the narcotic law to conform to the Federal act.

NEVADA: No changes during the last session of the legislature.

NEW JERSEY: No changes during the past year.

NEW MEXICO: No changes during the past year.

NEW YORK: Assembly Bill 2185 became a law on May 3rd and amends the public health law in relation to the practice of pharmacy. The Boylan law was amended by the Bloch Bill to make it conform with the Harrison law. The Bloch amendment also provides for the sale of chloral hydrate.

NORTH CAROLINA: The change in the laws in this state, which goes into effect January 3rd, 1918, provides that in order to become licensed as a pharmacist the applicant shall have attended a reputable school or college of pharmacy or medicine for not less than nine months.

NORTH DAKOTA: State pharmacy law, beginning 1915, requires all registered pharmacists to be graduates of a school of pharmacy granting the degree of Ph. G. or better.

OHIO: The change in the law in this state provides that an applicant for State examination must be a graduate from a reputable college of Pharmacy and also provides that an apprentice shall be registered with the State Board of Pharmacy.

OREGON: In this State two laws of importance have been enacted. Section 14 provides for changes in the procedure of becoming registered and Section 12 provides a method for the sale of ethyl alcohol by means of registration and the making of affidavits for the sales of the same. Books are supplied for that purpose.

PENNSYLVANIA: One law was enacted in this State which provides that all persons applying for examination must be, among other qualifications, a graduate of some reputable and properly chartered college of pharmacy of this or some other state, or any foreign country whose pharmacy licensing board or other authority recognizes the graduates of the reputable and properly chartered colleges of pharmacy of this state, and admits the graduates of all such colleges to its pharmacy licensure examinations.

RHODE ISLAND: Amendment to their narcotic law to conform to the Federal act.

SOUTH CAROLINA: No change during the last year.

SOUTH DAKOTA: A law, regulating the sale of common poisons in communities

where there is neither a drug store nor a registered pharmacist, was enacted. The narcotic law was changed to conform to the Federal act.

TENNESSEE: One new law was enacted in this state which regulates the handling of intoxicating liquor by druggists.

TEXAS: No changes have been reported during the past year.

UTAH: Three laws affecting pharmacy were passed: (1) governs the compensation of the members of the Pharmacy Board and provides that all funds collected by the Board must be turned into the office of the State Treasurer in place of being dispersed by the Board itself; (2) provides the Board with power to revoke certificates of registration, and (3) repeals all poison laws and substitutes a narcotic law covering the sale of all poisons.

VERMONT: A change was made in the narcotic law to conform to the Federal act and to cover the sale of cannabis indica.

VIRGINIA: No changes reported.

WASHINGTON: No legislative change reported. The State Board of Pharmacy has adopted a resolution which provides for graduation from a reputable school of pharmacy as a prerequisite to the licensing examination.

WISCONSIN: One law was passed which was introduced as Senate Bill No. 343 S. by Rollman. It provides for compensation for the Secretary of the Board and specifies his duties and it also provides for reciprocity with other states.

Chairman Freericks: We have a number of very interesting papers on the program this morning, but some of the writers are absent. It is for you to decide whether these papers shall be read by title or whether you will hear them. The first paper is by Dr. W. H. Zeigler of the Department of Pharmacy of the Medical College of South Carolina at Charleston, and is entitled, "Should Pharmacology be Taught in Schools of Pharmacy? If So, to What Extent?" Is it your pleasure to have this paper read or should it simply be read by title, as it has been so read, and referred to the Publication Committee?

Moved by Dr. Binz and seconded by Dr. Chism, that the paper be read by title and referred to the Publication Committee; motion carried.

Chairman Freericks: The next paper is by Mr. Charles P. Valentine, entitled, "More English for the Pharmacist." Mr. Valentine is instructor at the University of Montana. What is your pleasure with reference to this paper? Shall it be referred to the Publication Committee or do you desire to have it read?

Moved by Dr. Anderson and seconded by Dr. Binz that the paper be referred to the Publication Committee; motion carried.

Chairman Freericks: The next paper is that of Mr. Gathercoal, entitled, "The Teaching of Materia Medica in Medical Colleges."

Dr. Binz: I should judge it is a very interesting subject and one very valuable to pharmacy, and if it is not too lengthy, I would prefer to have it read and would move that the paper be read. Whereupon Mr. Freericks read the paper by Mr. Gathercoal.

The Chairman: The next regular paper on the program is by Miss Zada M. Cooper, the Associate of this Section, and is on the subject, "Should a Library Reading Course be Made a Part of the Curriculum of Schools of Pharmacy?"

The paper was read by Miss Cooper and after discussion referred for publication.

Chairman Freericks: We have a most interesting paper from Prof. E. Fuller-

ton Cook, who, unfortunately, is not with us. The subject, is "Notes on the Teaching of Dispensing in the College of Pharmacy Laboratory."

The paper was read by Professor Newcomb and afterwards referred for publication.

Chairman Freericks: There are just a few small matters which will close the morning session. There was referred to this Section by the General Session some recommendations from Dean Wulling of the Conference of Faculties. I will read them. I do not quite know how we will act on them, but that can possibly be taken up as the matter is presented to you. Dean Wulling, as President of the Conference, made the following recommendations which were reported on favorably by the Committee on President's Address:

First, that a Standing Committee on Higher Educational Standards be appointed by the President of the Conference to work jointly with similar committees of the American Pharmaceutical Association and National Association of Boards of Pharmacy, National Association of Retail Druggists and State Associations, said Committees to work with the President of the Association as well as jointly.

Second, that a Special Committee on the Federation of all Pharmaceutical organizations be appointed.

Now, I take it that this was referred to our session because it pertains to educational matters.

No doubt it was desired to have either an approval or disapproval of the suggestions and thus refer the matter back to the General Session.

The Chair, therefore, would declare in order a motion to approve or disapprove of these recommendations as made by Dean Wulling.

Dr. Anderson: I would like to move that the recommendations be approved as suggested by Dean Wulling of the Conference of Faculties.

The motion was seconded by Dr. O. F. Claus.

Chairman Freericks: Are there any other remarks?

The motion having been regularly made and duly seconded, and the question called for, the same was declared carried.

Chairman Freericks: We have a communication that was addressed to our President, Mr. Mayo, coming from the Department of Agriculture pertaining to wood alcohol.

The communication is from S. F. Acre, in charge of the Section of Derived Products. It isn't a very long communication and I believe coming from an official department it should have the attention of our Section.

Thereupon the letter was read as follows:

March 23, 1915.

Caswell Mayo, President, American Pharmaceutical Association:

MY DEAR MR. MAYO: At the request of the National Wood Chemical Association, I was appointed by our director, Howard F. Weiss, to go thoroughly into the study of the industrial use of methyl alcohol and the dangers incident thereto. I have been extremely anxious to learn the conditions under which wood alcohol is used industrially so that I could make recommendations that would allow the manufacturers to use this material in every legitimate way and at the same time protect the public against any dangers coming from this material. It is agreed by all of us that wood alcohol is a poison and should never be used in any article of food, drink, medicinal, or toilet preparations, nor should its vapors in concentrated form be

inhaled in unventilated spaces such as beer vats. We are doing everything we can to educate the public along this line and the manufacturers and refiners of wood alcohol are aiding us in every way possible. They are also encouraging uniform legislation in different states with the idea of protecting the public against the misuse of their products. I suggested to Mr. E. B. Stevens, president of the Wood Products Company, Buffalo, and who is the representative of the above-named association with whom we are dealing directly, that one of the most effective steps that he could take to protect the public and at the same time help to bring about the uniform legislation so necessary for the stability of his business is to co-operate with you in having the National Association Retail Druggists and the American Pharmaceutical Association pass resolutions to the effect that every wholesale and retail druggist must label every container of wood alcohol in his possession or sold by him with a proper poison label and warning somewhat like the following:

POISON
Wood Alcohol
"WARNING—It is unlawful[1] to use this fluid in any article of food, beverage or medicinal or toilet preparation for human use, internally or externally."

If such a resolution is passed by your association, you could start a propaganda in your publications, recalling to the druggists the fact that wood alcohol is a poison when taken internally and may produce blindness and death, and that it is their duty to educate the public to these facts and prevent accidents by labeling the containers sold and giving information to ignorant people that wood alcohol is different from grain alcohol. I have collected most of the facts bearing on the industrial use of this material and have a large number of references to cases of blindness and death arising from the misuse of this material, and I should be very glad indeed to place these at your disposal for use in your editorials.

Mr. Edward Williams, Secretary of the State Pharmacy Board, Madison, Wis., has assured me that you will co-operate very heartily with us to secure this end. I shall be in New York in the near future, at which time I shall be glad to call on you and have a thorough discussion of this question. Mr. Stevens is now conferring with the Society for the Prevention of Blindness and a number of eminent medical men in order to learn their views as to the proper labeling of this material. After he and I have had another conference, I could then come to see you again when we could put the matter in its final form for presentation to your association for action and for publication. I shall be very glad to hear from you at once to learn whether you are in sympathy with our efforts along this line and will co-operate heartily with us. I can assure you that the efforts which you could make in our behalf would be of untold importance to the health and convenience of the people of the United States. I am endeavoring to arrange the matter so that we can have uniform federal and state legislation concerning this subject and I have already secured the hearty co-operation of the proper federal authorities in Washington, several state officers, and a number of societies and eminent medical men.

Very truly yours,

(Signed) S. F. ACRES,

In Charge, Section of Derived Products.

Chairman Freericks: Now that this communication has been read the Chair would entertain a motion to receive it, and declare that such a motion is in order. Shall I take up the recommendation separately or shall I first receive the communication?

Mr. Arny: First receive the communication.

[1] The word "dangerous" was substituted by the Section

Chairman Freericks: Is there a motion to receive the communication?

Moved by Mr. H. V. Arny and seconded by Mr. Louis Emanuel, that the communication be received; motion carried.

Chairman Freericks: There is, as you will remember, a recommendation in this communication to the effect that a resolution be passed by our Association providing a warning on the label as to the use of wood alcohol and it is for you to decide whether you favor such a resolution. The communication itself would indicate it, and all that would be needed would be a motion that such a recommendation be approved by this section.

Mr. H. V. Arny: I will make such a motion. But please read the label again.

The label was read as follows: "Poison, Wood Alcohol, Warning. It is unlawful to use this fluid in any article of food, beverage or medicinal or toilet preparation for human use, internal or external."

Mr. H. V. Arny: Is that true?

Chairman Freericks: That is for you to decide upon and to give us the benefit of your judgment on one way or the other.

Mr. Louis Emanuel: I do not think it is true as far as toilet articles are concerned. I believe it is lawful to use wood alcohol in toilet preparations.

Chairman Freericks: It is undoubtedly used in some states.

Mr. W. L. Scoville: This question of the business propriety of selling wood alcohol in my experience is very much misunderstood. Dr. Reid Hunt a number of years ago went into a very thorough investigation while the question was in the air. No one knew whether wood alcohol was very much of a poison or not. To sum it up briefly, he made a rather remarkable discovery, namely, that wood alcohol in single doses is less poisonous than grain alcohol; in other words you take one dose of wood alcohol and you get less effect than you do from an equal dose of grain alcohol; but wood alcohol has a singular poisonous action that is altogether different. When you repeat wood alcohol in successive doses, say three or four times, then its action on the system is peculiar; it acts as an atrophic on the optic nerve; it gives way to that peculiar form of progressive poisoning that they cannot treat and cannot stop. You can take one dose, and then it will not do you any harm. Of course, if you take a large dose it might kill you, that is, speaking of wood alcohol. If you continue its use you get degenerative changes in the system that the doctors do not know how to treat. Men have lost their sight, some have lost their reason, and there is no way of stopping it. And there is the difficulty. They have found that even the vapors of wood alcohol, taken continuously or repeatedly, have a similar effect. Now, while I want to be on the safe side, it is generally considered that the use in toilet preparations is rather dangerous. It all depends on how your toilet preparation is used, how much of the vapor is taken in. There might be some danger and therefore I think the resolution is a wise one.

Dr. W. C. Anderson: We have a very stringent law in New York prohibiting the use of wood alcohol in toilet preparations or otherwise; no one in New York State can sell it.

Dr. O. F. Claus: I think we should always bear in mind the words, "Safety First."

Chairman Freericks: Do I understand that you make a motion to approve the use of the label? Dr. Claus made the motion and Mr. Packard seconded it.

Mr. George Lichthardt: I think the motion is unfortunate in calling it "wood alcohol," stating that that is the nature of it. I think that if the manufacturers had started out with some particular name, calling it by some other distinctive name and had omitted the name "Alcohol," that then we would not have had this trouble. The people think alcohol is absolutely harmless and they will buy it and use wood alcohol for outward application. I have had some trouble in my business in keeping them from using it. I know of cases where the application of wood alcohol or rather its absorption, has caused trouble and even serious accident.

I think it would be wise in a resolution of that kind to ask the manufacturer to apply another name and prohibit the use of the term "Wood Alcohol." We should have some distinctive name for it and make it the legal name and prohibit the using of the words "Wood Alcohol."

Chairman Freericks: Before you go any further I would like to say that I believe there is a slight misunderstanding regarding the resolution, or rather, I might say, the motion. The motion made by Dr. Claus was to receive the communication. There has as yet been no motion to approve that resolution as offered, and I therefore ask, do I understand now that Dr. Claus would make such a motion and Mr. Packard would second it? There is no specific resolution here. There is a recommendation which we can make the basis of a resolution.

Mr. E. L. Newcomb: The resolution should be contained in the motion.

Mr. H. V. Arny: As I understand it we resolved to adopt a label similar to that.

Chairman Freericks: Exactly.

Mr. Louis Emanuel: I offer a substitute motion to that resolution eliminating the word "unlawful," because the label as so stated seems to be untruthful. For instance, while it might be truthful in Pennsylvania it would be untruthful in Ohio because Ohio strictly prohibits its use in toilet preparations.

Mr. J. U. Lloyd. We all know that this subject of wood alcohol has for many years been prominent in this country, wood alcohol being considered a poison. I remember at the meeting in Chicago it was sought to have adopted a resolution of that kind. An attempt was made to get some such name introduced, in order to introduce wood alcohol into pharmacy and the samples were there and I remember how energetically Mr. Ebert opposed the use of that until it was established as to whether it would carry with it the qualities of grain alcohol. Concerning the action of wood alcohol the Chairman will apprehend that we had in Cincinnati a few years ago a very pathetic case in which blindness resulted from the vapor of this alcohol. I know that at that time the attorneys on both sides kept the Lloyd Library busy trying to show whether it was or was not a poison, and I know personally from cases up on the Ohio River that it has been accepted pretty generally as being poisonous, especially where three ignorant people died from drinking wood alcohol as a beverage. And it seems to me that it is thoroughly established that wood alcohol under certain conditions is a poison and that even the vapor is a poison, as shown by its effect on the eyes of the unfortunate person in Cincinnati. Now, many persons cannot read. While I favor this resolution we all realize that

many people do not read, and many people do not see the label and do not read it, and I might say that I do not know whether it is proper or not. I cannot tell. But I think a label of that kind should be accompanied by a skull and cross bones.

Chairman Freericks: The suggestion comes that this Association adopt a label, somewhat like the label read, and that that should be approved by way of resolution. If there is no objection the Chair will take it that the suggestion made by Mr. Emanuel is satisfactory, for it is a point well taken, and that is that we leave out of the reading the word "unlawful" so it will read then, speaking of the warning "Poison—Wood Alcohol—Warning—it is Dangerous to use this fluid in any article of food, beverage or medicinal or toilet preparation for human use, internally or externally." That would make it read "it is dangerous to use this fluid." If that meets with the general approval, I want to put that as a separate motion. We will now take a vote upon the matter presented by Dr. Claus, with the understanding that we approve of a label similar to this, leaving out the word "unlawful." The motion having been regularly made and put, was declared carried.

Chairman Freericks: The report of the Committee on Chairman's Address is now in order. We are asking for this report at this time because the Chairman of that committee will be otherwise engaged this afternoon. I will ask Miss Cooper to take the chair.

REPORT OF COMMITTEE ON CHAIRMAN'S ADDRESS.

Your committee, to whom was referred the address of the chairman of the Section on Education and Legislation, begs to submit that the various subjects treated by the Chairman were given a most comprehensive form, and is indeed a marvel of its kind.

We concur with the Chairman that the American Pharmaceutical Association should, in no uncertain language, declare itself opposed to that regulation under the Harrison Act which prohibits the refilling of physicians' prescriptions which contain a minimum quantity of opiates and permits the sale of proprietary medicines containing said substances.

We thoroughly agree with the Chairman that the Association should give its unqualified endorsement to the Stevens-Price Maintenance Bill.

We believe with the Chairman that steps might be properly taken by this Association looking to the repeal of the tax on toilet articles, which now falls too largely on the retail pharmacist.

The marvelous success of the Section in interesting 44 State Boards and 42 State Associations in the framing of a modern pharmacy law, leads the committee to urge that the Council grant the $100 asked for, to continue the work of the Voluntary Conference on a uniform and modern pharmacy law.

C. HERBERT PACKARD, Chairman,
OTTO F. CLAUS.

Dr. Anderson: I would like to move that we take this report up seriatim, that is, act on each item as it comes up.

Miss Cooper: It has been moved that we act on these recommendations one at a time. Are there any remarks? If not those in favor of this will say aye. The motion was carried.

Mr. C. H. Packard: I just want to make a remark outside of the report. This report is a short one. In fact the committee did not hardly consider it necessary to put it in writing. It would seem almost like exceeding the vocabulary to enumerate the merits of the Chairman's address. You all know how much time and work he has given to the subject and the work the various members of our Association have put into this matter.

Dr. W. C. Anderson: One reason why I made the motion as I did in reference to this matter was so that we might be in a position to act upon it at this session. The report says, "We are opposed to that provision of the Harrison Act"—I do not think the Chairman's Address made any such statement as that. This is a regulation and not a provision of the Harrison Act. The Harrison Act does not provide that certain prescriptions shall be repeated and others not, concerning or containing certain properties, but the department has ruled this shall be the case and it is the ruling of the department we should oppose and I think we ought to make that clear.

Mr. H. V. Arny: I second the motion.

Mr. Freericks: May I be permitted to say just a word? I want to make it clear. I desire to say that undoubtedly Dr. Anderson has understood the Chairman's Address quite clearly, and there is no provision, it is true, in the Harrison Act at all that would prohibit the refilling of prescriptions containing minimum quantities. It is a regulation of the Department. Of course, the Chairman in his address did not touch upon the matter of proprietary medicines in order to compare them, and did not seek to do that, nor intimating possibly that it would be all right to have such a regulation, if we also govern proprietary medicine. That is not the Chairman's view at all. The Chairman's view is, and I believe I may be privileged to state it at this time, that where proprietary medicines contain the minimum quantities there can be no exception to their sale, and that the same is true with prescriptions filled upon the order of a physician. The objection to which the Chairman's Address pointed is that the Department of Internal Revenue has undertaken to read something into the Harrison Act that is not there, and makes it now, under their ruling, unlawful for the pharmacist to fill prescriptions containing a minimum quantity. This is not only an absurdity but it is a gross injustice upon the American public who use medicines.

Dr. W. C. Anderson: I think that if that wording is simply corrected to state that it is the regulation of the Department instead of the provision of the Harrison Act, that we object to, that will cover it. I therefore move the adoption of the report of the committee.

The motion having been regularly made and seconded by Dr. Philip Asher, the Chair called for further remarks.

Mr. G. H. P. Lichthardt: The Internal Revenue Department of the United States has greatly and in fact gradually encroached upon the liberties of the American public. They have, in various ways constituted themselves judge and jury and fined people under various pretexts and there is practically no remedy, and I am very glad that such a resolution has come up, and that the Chairman of this Section has started the thing, and a little later on I wish to make a motion asking for an investigation of the basic principles of the Internal Revenue Department of the United States to see where we really do stand. As I understand it this government is a legislative government and Congress cannot legislate someone else to make crimes and punish crimes and therefore take the power away from the people.

The Chair: Are there any further remarks? Are you ready for the question?

It was moved that the report be adopted or rather approved. Carried.

Dr. Philip Asher: We thoroughly agree with the Chairman that the Association should give its unqualified endorsement to the Stevens Bill.

Dr. W. C. Anderson: I move that that section be adopted; seconded by Prof. J. U. Lloyd. Carried.

Whereupon the Chairman read in part as follows:

The Committee concurs in the recommendation of the Chairman concerning the repeal of the stamp tax on toilet articles.

It was moved by Dr. John Dawson and seconded by Mr. Buekma that the portion of the Committee's Report read be approved. Carried.

Thereupon, the next part of the Report asking that the Association appropriate $100 was read and Dr. Philip Asher moved, seconded by Mr. H. V. Arny, that it be approved, and upon motion, it was declared carried.

Dr. Philip Asher then moved that the report as a whole be adopted, which was seconded by Dr. W. C. Anderson. The motion having been put, on vote, the same was declared carried.

Chairman Freericks: There is just one matter before we adjourn the Session and that is the nomination for the officers for the coming year.

There has up to this time been nominated only one candidate for the office of chairman and one for the office of secretary. The nominee for chairman is your humble servant, who feels, truly feels, that the Section is entitled to a new chairman for the coming year and should have it. The other nominee is the one for secretary, Professor Kuever, who has been the nominee last year and who, as I say, has been again nominated to act this year. And I would therefore declare in order any further nominations for the office of chairman of the Section.

Prof. J. U. Lloyd: I hope, gentlemen, and young ladies, that you will put this on Freericks again. He has done so admirably and we are so proud of him in Cincinnati that I am sure Cincinnati will want him to stay in that place, and I hope the nominations will be declared closed and that Freericks will see fit to take that place.

Mr. C. H. Packard: I second the motion.

Miss Cooper, as chairman, then declared the nominations closed and Mr. Freericks was declared elected.

Mr. F. H. Freericks: I will say the Chair is somewhat doubtful as to whether such a motion is in order.

Mr. H. V. Arny: You are not the chairman.

The Chair then put the motion, and the same having been regularly made and duly seconded, was declared carried.

Mr. Freericks resumed the chair.

Chairman Freericks: There are in order nominations for the Associate Chairmanship and further nominations for secretary. I desire to inform you, so that you may be fully informed, in fact, that further nominations will be in order now and the election is to be held at the afternoon and closing session and nominations will again be in order there. Are there any nominations forthcoming for the Associate Chairmanship of the Section? There are three to serve.

Dr. W. C. Anderson: I nominate Mr. Emanuel for the office of Associate Chairman.

Chairman Freericks: Mr. Louis Emanuel of Pittsburg has been nominated. Any further nominations.

Mr. Louis Emanuel: I nominate Miss Zada Cooper.

The nomination for Miss Zada M. Cooper for the office of Associate Chairman was seconded by Mr. C. H. Packard of Boston, and Dr. W. C. Anderson seconded the motion that the nominations be closed for this session.

Chairman Freericks: I will put the motion with the understanding that it is for this session. The motion has been made that the nominations for this session be closed. The motion having been regularly made and duly seconded, and the question put, the same was declared carried.

Chairman Freericks: Now, are there any further nominees for the office? Mr. R. A. Kuever, of Iowa, has been nominated at this time. Mr. Kuever has been acting as secretary last year. He has, unfortunately, not been able to be with us this year.

Dr. Anderson: What are the chances of his being with us next year?

Prof. Teeters: Professor Kuever will be with us next year. He regrets it very much, and desires me to tell you that it was absolutely impossible for him to be with you. That matter was decided at the last minute.

Dr. Anderson: I move that the nominations be closed for this session. Carried.

Chairman Freericks: A motion to adjourn until 2:15 is in order.

It was thereupon regularly moved and seconded, the question put, and the motion declared carried that an adjournment be had until 2:15.

THE TEACHING OF MATERIA MEDICA IN MEDICAL COLLEGES.*

EDMUND N. GATHERCOAL, PH. G.

A plea for the better training of the phyisician along the lines of Pharmacy and Materia Medica, leading toward an improvement in prescription writing, which is rapidly becoming a lost art. The Author refers to investigations of the prescriptions of today and bases his findings on an analysis of 10,000 consecutive prescriptions, collated in hundreds from different parts of the country.

From the pharmacist viewpoint, the education of the physician along the lines of pharmacy, materia medica and prescription writing has never been as complete and thorough as it should have been. It is evident, however, from a review of recent medical literature that among physicians themselves, concern has arisen over the tendency to eliminate or curtail these studies in the medical college curriculum.

It goes without saying, that the medical graduate should not be expected to be as thoroughtly proficient in the details of pharmaceutical manipulation,

*Presented as a part of the report of Committee on Drug Reform, L. E. Sayre, chairman and read before the Section on Education and Legislation, A. Ph. A., San Francisco meeting.

or informed upon the origin, description, constituents, etc., of drugs as is the educated pharmacist. However, the medical graduate who has first received a pharmaceutical education is at a great advantage over his fellows who have not had such an education. Between two and three percent of the graduates of colleges of pharmacy pursue medical courses and it is the common witness of these students that their pharmaceutical training is of great value to them, not only in their medical courses, but also in later practice. If the medical student received as much actual practice in prescription writing as the pharmaceutical student does in his prescription reading, the grade of proficiency shown by the physicians in this art would be much increased.

Some of the deficiences shown by physicians in their prescription writing are well discussed by Dr. Bernard Fantus in a paper read before the Federation of State Medical Boards last year. He showed that 36 percent of 10,000 consecutive prescriptions collected in 100'ds from different parts of the country were written in English and 18 percent in poor Latin; this showing despite the almost universal teaching of medical Latin in colleges of medicine. His report further showed that though the metric system of weights and measures is very generally taught in medical schools it was used to but a very slight extent in prescription writing. Incompatibilities were present in about 2 percent of these prescriptions and overdoses or errors in about 1 percent of them.

To quote from Dr. Fantus: "After all, however, pharmacists do not see our worst failures in the teaching of prescription writing. I am convinced that a certain proportion of our graduates, on entering practice and finding themselves incompetent to write prescriptions, solve their problem by not writing prescriptions at all, dispensing their own remedies, with all the evil results of such practice.

"Summing up our findings, it becomes evident that there is need for considerable improvement in prescription writing. This could be secured if it were realized that prescription writing cannot be taught by lecturing or by demonstrations; that the students must be drilled in prescribing. I believe that the best results can be obtained, if a course on pharmacy and prescription writing be given before the work in pharmacology is taken up. The students should be made familiar, in this course, with the various classes of pharmaceutic preparations and their prescribing. Then, when the student enters his course in pharmacology, he is ready to write prescriptions for the remedies needed by the patients treated in the hospital and in the dispensary, and our students would leave our medical colleges well trained in prescribing."

In an admirable paper by Professor L. E. Sayre published in the Journal of the American Pharmaceutical Association last year a strong plea is made for the strengthening of the materia medica courses in medical schools. Professor Sayre says in part:

"As a matter of fact there are few who do not believe in drugs. The pharmacologist and clinician, working in their respective fields and, to a great extent, in co-operation, have contributed material to medical literature which justifies this faith in drugs. The instructor in materia medica (or systematic pharmacology) must be familiar with the result of these labors of the two branches of science and prepare his student so that when he is handed over for therapeutical and clinical work he shall be fully prepared to appropriate the results of

these researches and a thorough knowledge of the tools used in the treatment of disease."

"Herein lies the justification for the compulsory teaching of materia medica and the duty of the instructor and the entire medical faculty in seeing to it that its emphasis is not minimized."

The pharmaceutic and pharmacologic knowledge essential for competent prescription writing might be summarized as follows: The official Latin titles, abbreviations and doses of all the drugs, chemicals and preparations of the U. S. Pharmacopoeia; proficiency in the use of the tables of metric weights and measures; theoretical pharmacy regarding the galenical preparations and those for extemporaneous compounding; the active constituents of crude drugs with the relative therapeutic value of the active constituent to the crude drug itself; the relation of physiological action to chemical constitution; pharmaceutical, chemical and therapeutic incompatibilities.

Of course therapeutics, theoretical and practical, toxicology, medicine, etc. etc., are also essential and above all, as Dr. Fantus urges, a great deal of practice in actual prescription writing should be required of the medical student, for after all practice makes perfect.

ABSTRACT OF DISCUSSION.

Mr. E. G. Binz: That is a very able paper. I think it is a subject that bears close investigation and one that will strike at the nucleus of all the trouble between the pharmacist and the present practitioner.

It is a course that should have been inaugurated in the curriculum of medical schools in years past; and there is absolutely no question that if the medical schools will take up this course and follow it out carefully that it will materially improve the practice of pharmacy.

Dr. W. C. Anderson: It might be of service to some of the members who take an active part in propaganda work with the physician to know that in New York City a few years ago when we were inaugurating our propaganda work, holding meetings with physicians was found to be successful. We still continue those meetings and recently the question of teaching materia medica and prescription writing came up for discussion and we suggested that work should be done just along the lines of this paper.

The heads of the medical schools said to us: "It is a good suggestion, we realize the need for it but we cannot do it, our curriculum is full. We have all the material we can now possibly put into our teaching in the time allowed without increasing the course to a great extent. We cannot take up this work as you suggest."

We then asked them whether they had studied their curriculum carefully in an endeavor to see if there was anything in it that they could cut out so that this very important subject might be added. Perhaps I neglected to say that the conversation I referred to took place between one of the heads of the Bellevue Hospital in New York and our members. Well, the doctor at Bellevue College said he thought that was a good suggestion and he would look over it. When Dr. LeFevre came to our next propaganda meeting, the meeting of physicians and pharmacists, he said that our suggestion had appealed to them, that they had looked over their curriculum and they found that they were using a number of hours each week in teaching the physicians how to make emulsions and pills and suppositories, that we might say were absolutely unnecessary to be taught in medical colleges. We find examples of that condition in most of the medical colleges of the country, which merely take up time, which could be utilized in the teaching of therapeutics and prescription writing. And I might say that they (the Bellevue) immediately changed their course and introduced the splendid one along the lines suggested by this paper, so much so that they provided subjects out of the United States Pharmacopoeia and National Formulary. That is what is done by propaganda work, and I call attention to it in the belief that it might be of some service to others who work along this line with physicians. I believe that we

can go on year after year preaching co-operation and asking the physicians to prescribe more drugs in an ethical way, but without results. We cannot get results until the student in the college is taught the proper writing of prescriptions, and he is placed in a position where he has confidence in himself when he diagnoses a case that he can write out the prescription which can be compounded properly by the professional pharmacist.

Dr. Philip Asher: I have not heard all the paper but I believe I have heard sufficient to allow me to discuss a feature that has not come up along the line of what Prof. Anderson said. He stated that he felt that the curriculum of the medical college could be enhanced by teaching materia medica along proper lines. But there is one place where the physician can be educated and at the same time allow the pharmacist to be a source of help and education and that is the hospital apothecary. In all large hospitals the apothecary is the one to do more good towards propaganda work that anyone else. I do not know whether it would be in keeping with this paper to offer a resolution that would empower or place the apothecary in a position to teach the proper work along these lines. If the hospital apothecary would assist in the instruction of the young doctor along these lines I believe it would do more good than anything else. If the young physician is taught properly by the apothecary we will be working along better lines and it will give the apothecary a great deal more love for his work, he will know that he is doing something, in fact doing more in this line than anyone else. Take the pharmacist at large. When a young doctor starts to practice medicine he makes friends with the pharmacist, but sooner or later he drifts away. If he is properly instructed at the time he is taught medicine, I think it will really give us a very good and lasting foundation.

Dr. O. F. Claus: The same course that Dr. Anderson spoke of was pursued in St. Louis by the Retail Druggists' Association and the question was taken up with members of the medical society, and also the colleges. I am pleased to say that two of the colleges are teaching prescription writing. It is not only a great help to the young doctors but it is indeed a big help to the druggists of St. Louis.

Chairman Freericks: Would it be impossible altogether to seek to teach the medical student in the colleges of pharmacy, to interest them in some manner to give courses in pharmacy. Is that so altogether impossible? It is a question that has often arisen in my mind, and if there is anyone who can possibly have anything to say on that feature it might be helpful.

Professor E. L. Newcomb: In that connection I want to say that in our prospectus we make provision for such teaching. We have been in existence fifteen years and no student has availed himself of the opportunity. I have heard medical students say they do not get enough of pharmacy, that there are certain things they would like to know about it, but they cannot spare the time for the study. Medical students in our school are required to take a certain amount of pharmacy in the college.

Mrs. R. A. White: There is only this feature about it: if you introduce these medical students into all the intricacies of manufacturing our wares, putting up our prescriptions and so forth you will be surely making them dispensing physicians. Physicians should know how to write a correct prescription, but to really give them a course in pharmacy seems to me impossible. This would prepare the way for more dispensing physicians.

Professor H. V. Arny: I might say that the question of teaching materia medica in the medical schools has very considerably improved in the last ten years. I recall one case of a man who went to a medical school and found when he got there that they were teaching in the medical school a much better course than they were in the pharmacy school. He found that the pharmaceutical laboratory course provided for more hours than they averaged in the regular college of pharmacy. The man who has charge of the department is an ex-druggist, and he is desirous of bringing about a reform, and the reform is exactly along the line mentioned in this paper by Professor Gathercoal. The object is this: He keeps before the student preparations of the U. S. Pharmacopœia and the National Formulary and the German pharmaceutical preparations. The student starts in with the material itself, and then he has the labeling to do, and the inscription of the label to write, he takes into consideration the writing of the prescriptions, and he is given certain tests,

and is compelled to write prescriptions and they are marked. If all medical schools were handled in that way, by the time the students graduated they would know something about prescription writing.

Mr. W. F. Root. I take it that the paper refers to the application, rather than to the work of a pharmacist. I do not think that the paper refers to the educating of a physician to make preparations but rather to know the ingredients, the materia medica. To my mind, the real doctor is developed from the man who started in as a druggist, who then goes to a college of pharmacy and later to a medical school.

Mr. Phillips: I think that sometimes we try to get too much into the college course. Pharmacists should use their efforts with the young physician when he first begins to practice and help him in his prescription writing, otherwise the detail man will get hold of him and show him the easy way to prescribe so that he becomes lost for a long time. I also think that the bringing together of physicians and pharmacists through the colleges, through the alumni, is really higher education.

MORE ENGLISH FOR THE PHARMACIST.*

CHARLES P. VALENTINE.

The tendency of pharmacy today, is toward the elevation of educational requirements for those who enter it. Many examining boards of pharmacy require that its applicants be graduates from a recognized college of pharmacy; the latter, in turn, are gradually, and wisely, demanding higher entrance requirements, and are lengthening the various courses they maintain. A number of our leading colleges of pharmacy are departments of the larger universities; their students receive collegiate training in chemistry, botany, and biology, along with that in the strictly pharmaceutical subjects, and yet the students in pharmacy are the only university students who are not required to take, nor do they receive, at least the first year's course in college English, during their attendance. If the student in law, in engineering, in commerce and accounting, in chemistry, or in a liberal arts or academic course, is given a course in college English, why should not the student in pharmacy, in the collegiate course, receive the same?

As yet the matter has received but little attention, and less recognition on the part of the schools of pharmacy. The American Conference of Pharmaceutical Faculties, it is true has prescribed a year of high school English for the schools complying with its standards for pharmaceutical educational requirements. Many colleges of pharmacy include college English as a requisite in their three and four years courses in pharmacy. This is, however, at present of little significance, since the great majority of students in pharmacy elect the two year course only.

The value and importance of English to the pharmacist must become apparent upon the analysis of the demands his calling makes upon him. The pharmacist of today is not only the professional man; to be successful he should be an intelligent carefully trained and versatile business man as well. Peculiar then, in that pharmacy combines the advantages as well as the difficulties of both a professional and a business career, it appears that the college of pharmacy

* Presented to Section on Education and Legislation, A. Ph. A., San Francisco meeting.

should strive to combine those college subjects which make for a practical as well as theoretical maximum of educational efficiency in its students. Among those subjects, not strictly technical, college English as a required course in pharmacy, would be of immense value and benefit.

English, in its broadest sense, implies the correct use of our language, in oral as well as written discourse, and in expression of thought. Matters of good usage, grammar, spelling, punctuation, paragraphing, manuscript arrangement, and letter writing, are hence essentials of paramount importance. To indicate the value of correct English in daily conversation, and as an aid to individuality and power in self-expression, seems superfluous in that it applies to the pharmacist no less than any and every individual.

To the pharmacist English means this and more: consider if you will, his business correspondence and letter writing, salesmanship, and show card writing. Would not college English prove of inestimable aid and value in these specific examples of the young pharmacist's necessary qualifications? Efficient salesmanship and advertising is the very life of any successful enterprise, be it pharmacy or any other profession or business. And what other than English is the foundation upon which these modified forms of expression depend?

On concluding, consider the pharmacist apart from his calling—as a citizen and a member of the community in which he lives. He, too, should cultivate interests outside of his art. He should, no less than his fellow professional and business men, be broad minded, and make his profession incidental to his being a good citizen. A college training should help make him so, and of those few not strictly pharmaceutical subjects permissible in an already congested course, college English deserves, above all others, a place in the course of our schools of pharmacy.

EXAMINATION OF FLUID EXTRACT OF CONDURANGO AND OF CONDURANGO BARK.

The German Pharmacopœia requires that when a mixture of 1 cc. (mil) of fluid extract of condurango and 4 cc. (mils) of water are heated to boiling, the liquid should become very turbid, but that the turbidity should disappear again on cooling. Two cubic centimeters (mils) of the cooled solution mixed with 8 cc. (mils) of water should yield a copious precipitate on the addition of tannic acid solution. Richter (*Apoth. Zeit.*) has utilized these reactions for determining the quality of both the fluid extract of condurango and of the bark. Four cubic centimeters (mils) of the boiled and subsequently cooled liquid are mixed with 16 cc. (mils) of water and 2 cc. (mils) of a 5 per cent. tannic acid solution. The precipitate is then allowed to separate and in the liquid 6.5 grammes of finely powdered sodium chloride are dissolved by gentle shaking. The mixture is then carefully transferred to a burette, and the quantity of precipitate is noticed, removing any foam by the addition of a few drops of alcohol. A good fluid extract of condurango should yield when examined by this method about 5 cc. (mils) of precipitate. For examining the bark, 50 grammes of the latter are macerated with 50 grammes of water for 4 hours. The mixture is filtered, the filtrate boiled and cooled again and 4 cc. (mils) of the cold liquid are treated as given above. The precipitate thus produced should measure from 5 to 6 cc. (mils).—*Through Druggists Circular.*

Papers Presented to the Joint Session of the Section on Education and Legislation, A. C. P. F. and N. A. B. P.

QUALIFICATION REQUIREMENTS FOR TEACHERS IN COLLEGES OF PHARMACY.*

WILLIAM C. ALPERS, SC. D.

The question, "Who is a Professor?" was brought to my notice during the last year at three different occasions. The first was a letter received from Dr. H. H. Rusby, in which he asked my opinion on the proper salaries of professors in schools of pharmacy. He had been appointed the chairman of a committee to gather facts on this point and report at the next meeting of the Conference of Faculties. When I tried to answer him, the thought naturally arose in my mind, what does he, or his committee, understand by a Professor? Is it a man who devotes his whole time, his whole life to pharmaceutical education, or is it a man who has all kinds of commercial interests, rushes to the school a couple of times a week, pulls out a manuscript, reads off a number of pages, and goes back to his work that he considers the object of his life?

The second occasion that brought this question to my mind was a letter received from a friend who is a member of the Board of Trustees of a certain college. On this Board, he is one of the few who advocate higher preliminary education, while the majority are opposed to it. In a discussion of this question, one of the Trustees closed his argument by saying: "All this talk about high school education for our students is nonsense, as long as our professors themselves have no such education."

The third occasion is the fact, well known to those who teach in schools of pharmacy that are connected with universities, that the pharmaceutical professors are often looked upon as an inferior class, not equal to the others, and simply tolerated. This fact was brought home to me at various occasions during the last year.

The main object of the joint meetings of the Conference of Faculties and members of Boards of Pharmacy is, without doubt, the desire and the hope to raise pharmaceutical education to the same standard as that of other professions; to have the same recognition for the teachers as well as the schools, and to gain equal respect for all members of our colleges. Dr. Albert Schneider, the former President of the Conference, in his annual message, pointed out in very terse words why the Conference has failed in many points, and why the progress made is remarkably slow and small. It is timidity that blocks the way. It is the fear of offending each other. It is the dread, natural to every man of education, of hurting his neighbor's feelings. While this tendency may be justified to some

*Read before the Joint Session of the Section on Education and Legislation, Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, held at San Francisco, August 11, 1915.

extent, and is in most cases traceable to a certain courtesy or gentleness, it is yet out of place in a movement for progressive reform, in an enterprise with a distinct aim and well-defined purpose; in an undertaking where frankness and courage must be the leading qualities. It must be understood that such a reform must be a reform for the future; that no measures adopted can be intended to have retroactive force, and that under no conditions should personal feeling or prejudice enter into the discussion. Nor should those who believe in conservatism indulge in obstinacy. The claim that we got along very well so far, and can get along just as well in the future; the argument that because our forefathers did not have a certain thing we do not need it, should not even be thought of. If such talk is of any value, there will be no progress of any kind. It is simply the argument of the stupid longshoremen who tried to destroy Fulton's first steamboat, because such a devilish invention would take their bread away. We must therefore look into the future. We must depict before our eyes a nobler and higher temple of pharmacy, built on a foundation of knowledge, education, truth and enlightenment, and must go to work with all our efforts until this noble structure is erected.

Let us, therefore, see who, in an acknowledged higher institution of learning, is called a Professor. Columbia University of New York, as well as the universities of Harvard, Yale and Princeton, have the following custom: The young man who wishes to enter the academic career is first employed as an *Instructor,* with a yearly salary of $1200. He receives an increase of $100 per year until $1600 is reached. At the discretion and pleasure of the Trustees, he is then appointed *Assistant Professor,* with a salary of $2000, with a yearly raise of $100 until $2600 is reached. At the pleasure of the Trustees he may be appointed *Associate Professor,* with a salary of $3000, with a yearly raise of $100 until $3600 is reached, and then receive the appointment of *Professor,* with a salary fixed by the Trustees.

You will notice that it says: 'he may be appointed' in each case, provided there is a vacancy and his services have been of such a nature as to make their continuance desirable. This system does not exclude that a particularly able man may be advanced, in one or two years, from the position of Instructor to Assistant Professor, and so on. No young man is employed, however, as Instructor unless he has an academic degree; that is to say, a degree for which he has worked, and which was conferred by an institution of equal standing; not an honorary degree, or a self-conferred degree, such as unfortunately there are quite a number in pharmacy. This rule, however, does not exclude to call a particularly able man to a professorship without reference to his former position, although cases of this kind are very rare.

In these universities it is supposed that the professor devotes his whole time to his work, and any outside occupation that would require his absence from the college for a number of hours every day, is not allowed. This same system prevails in many other universities in the West, although it may vary in the number of years of service and the height of salary. But the underlying principle is adhered to in every first-class university, and no university can join the Conference of Faculties until the system of appointment of professors has been passed upon.

These rules, adopted several years ago by the leading universities, do not refer

to men that were appointed before their adoption, under different conditions. It is evident that by such a system only able and earnest men will reach the goal of their life. It is clear that this system will create an atmosphere of education, learning and enlightenment throughout the halls of the university, and that the students will constantly see before them their superiors in knowledge and devotion.

Can such a system be applied to pharmacy? A number of the members of the Conference, particularly those whose schools are connected with state universities, will quietly reply that it has been applied for years in their schools. But these cases are not the rule. In a great many schools there is neither order nor system in this respect. In fact, there are Trustees who believe that a man with an academic degree thereby becomes unfit to teach. The question, however, is a very important one and should be considered and argued in the utmost frankness and earnestness. It seems to be wrong to judge and register a school of pharmacy solely by the pre-requisite requirements for the students. A school consists of teachers as well as students, and if reforms are recognized to be necessary, they should be made throughout.

I am fully aware that an academic degree, as such, does not make a man a good teacher and should never be the sole criterion of a man's ability. But if we deny the necessity of establishing some kind of a standard for the future professor in pharmacy, why are we so anxious to uphold such a standard for students and licentiates? A certificate from a high school, as such, does not necessarily make a good student. A diploma from a school of pharmacy does not necessarily make a good prescription man; and a license from the Board of Pharmacy is no guarantee that the holder will make a good proprietor. But we require all these credentials as a certain safeguard for the public against ignorance and impositions; and in the same way we should establish a standard for the future teacher as a safeguard for the students.

The desire for a higher education in all professional lines is not a local one, nor is it a passing wave of excitement. It is rather a firm conviction, based on long and careful observations of well meaning and thoughtful men that the time has arrived for a forward movement in this respect; a movement that extends through the whole country from one end to the other. It is, therefore, not only desirable, but it is our plain duty that we should approach this question with sincerity and earnestness; that we should discuss it in all its phases, arrive at a uniform result, and lay out a clearly defined way for future action. If we fail to do this, the legislatures of the different states or the national government will soon interfere. In fact, in some states they have done so already, in a tentative way. I, therefore, recommend this question to your earnest consideration.

A PHARMACEUTICAL APPRENTICESHIP IN AMERICA FIFTY YEARS AGO.

JOHN URI LLOYD, PHAR. M.

The Chairman of the Educational Section of the American Pharmaceutical Association, Mr. Frank H. Freericks, has asked me to record for this meeting my experiences, fifty years ago, as an apprentice in pharmacy. I think that all will agree that a paper such as this, being necessarily personal, should be written in narrative form, and in the first person.

I cannot recall when, from my earliest years, I did not know that I was destined to be a druggist. Whether this decision on the part of my parents was made from observation of my natural bent, or whether I followed, as intelligently as I could, a path that seemed to them most advantageous in those days, I cannot tell. But events, even before my birth, were such as naturally to indicate that this should be my chosen life work.

My father's profession of Civil Engineer, in which, in "York State," he had achieved considerable success, brought him, in 1853 into Kentucky as Surveyor of a railroad to be lined from Covington to Louisville. Bringing his family to Kentucky he located, temporarily, near the line of survey, in Burlington, Boone County. Unsettled financial and political conditions brought the railroad to a standstill, and my father and mother, (a Webster, of the Massachusetts Websters), opened a school which became, practically, a cosmopolitan educational institution. We always had, as "boarders," children from distant sections of Kentucky, and for the conduct of such a school I may say, in passing, my parents were unusually well qualified. Both were highly educated, and both had, in their Eastern home, been very successful teachers. Col. Henry S. Dean, an ex-Regent of Michigan University, now living in Ann Arbor, as a boy of fourteen attended the Academy of West Bloomfield, N. Y., of which my father was the Principal. Of him, Col. Dean says:

"I have always remembered Mr. Lloyd, (father of John Uri), with a great deal of affection, for I think he did more for me, as a boy, than any other teacher I ever had. He had a way of impressing things upon a boy that other teachers did not have. He did all the correcting in a school of several hundred, but he did not use corporal punishment. His methods of disciplining were very original, and very effective. On Saturday afternoons he was accustomed to lecture to the pupils, usually on some scientific subject of interest, and while attendance at these lectures was voluntary, they were so interesting that the pupils all wanted to attend. One of his most severe punishments for misbehavior during the week, was the loss of the privilege of being present at the Saturday afternoon lecture, so that it became a common thing in the village, when a boy or a girl was seen on the street during the time of the lecture to ask, 'What have you been doing this week? What rules have you been breaking?' I was in his school for a year, and never, in all my school days, did I have another teacher whom all the pupils loved, as they did Mr. Lloyd. They seemed to have all confidence in him. He believed in

fair play, which is a very necessary thing in dealing with a boy."—By Margaret Stewart, Secretary of John Uri Lloyd.

Rearing three boys and fitting them for a life work under the rather primitive conditions then prevailing in our section of Kentucky was no easy accomplishment, but the constant effort of my parents was in the line of inculcating in those under their charge, ethical ideals of future citizenship and usefulness in life. Our home training was ever in the line of impressing upon us useful lessons, and even at the table, conversation was of a kind to lead a youthful mind to quick and accurate judgment concerning topics of importance.

My apprenticeship in pharmacy may thus be said to have begun in my home years, for even when I was too young to be properly enrolled in the class in chemistry in the school, my interest in that subject was such that, when the class was reciting, I had thought for nothing else, and at home I was guided into home experiments, in which such exhibition substances as oxygen, hydrogen, etc., were made conspicuously entertaining. I of course had no apparatus, such as glass tubes or retorts, but the very lack of such appliances led me to exercise ingenuity in finding something to take their place. I well remember how connected stems of the pumpkin vine were made to furnish a delivery tube for gases generated in an old-fashioned, conical ink bottle, to a pneumatic trough improvised from my mother's dish pan, a pumpkin stem that curved naturally, forming the bend over its edge, my mother's quart camphor bottle being borrowed, (surreptitiously), to collect the gases generated in my back-yard laboratory.*

Another influence in my early life, that had a deep influence upon my later course of action, was the fact that both my parents were tinctured with the Thomsonian doctrines of New York and New England, and through bitter personal experience, were antagonistic to bleeding, salivation and like processes. Myself a sufferer for years in early childhood from asthma, which resisted all treatment from the doctors, an appeal for help was made for the home treatment commended in New York, and my first relief from the affliction was obtained from the Lobelia Pills made by my grandfather Lloyd, on his kitchen table in North Bloomfield, New York, after the Thomsonian formula. This, doubtless, had its influence in later years, when it became necessary for me to choose between pharmacy according to regular methods, and pharmacy as applied to the minority school.

When I reached the age of fourteen, my parents decided that the time had arrived when I should make an active beginning in pharmacy proper. They were united in the opinion that *thoroughness in preliminary work*, directly designed to fit one for a life vocation, was the first essential for success, and although they did not underrate the value of a college education and were in a financial position to send me to college, they feared that if my school education were made the first requisite, I would not be willing to begin at the bottom in pharmacy, a thing they believed to be essential in the training of a pharmacist, and that I would thus be

* All this is recorded in my extemporaneous remarks at the Boston meeting, 1912. My old "Comstock's Chemistry," and my "Fownes' Chemistry," now on the shelves of the Lloyd Library, may be considered as the foundation stones of that Library.

diverted from my life work. Though highly educated themselves, they felt that such opportunities as came from schools could be better accomplished after I had grounded myself in the preliminary work of the pharmacist.*

Seeking a Situation.—The winter of 1863-4, my father was teaching in Florence, Kentucky.† I was then too young, too inexperienced, and I will add, too "green," to be permitted to go alone to the city to look for work. After the decision that I must now begin my apprenticeship, every Saturday morning, (vacation day), my father and I would start to Cincinnati in the local milk wagon, the only passenger conveyance to the city. Leaving home at 4 a. m., we would wander about the city until the drug stores began to open. Then, going from one to another, my father would ask, "Do you need a boy?" Constant disappointment followed until, one day, Mr. W. J. M. Gordon, at the corner of Eighth Street and Central Avenue, (then *"Western Row"*), much to my delight, answered, "Yes." My father and he together made the arrangements for my apprenticeship, I an eager, much interested listener. The arrangement was as follows:

I was "bound" for two years, to an apprenticeship to "learn pharmacy," beginning, as both expressed it, "at the bottom," which I soon found to mean, literally, *at the bottom.* My day was to begin at seven o'clock in the morning, when I was to be at the Post Office to get the mail and take it to the store. Every morning I was to sweep the store, clean up the soda counter, wash all the glasses, wash the bottles for the prescription counter and case, clean the graduates and mortars used in compounding prescriptions, once a week wash all the windows, run of errands as necessity required, fill the soda syrups and wait on the soda counter, and at odd times, put in my time filling and folding Seidlitz Powders. For performing these duties, I was to receive $2.00 a week the first six months, $2.50 the next six months, $3.00 the third six months, and $4.00 the remaining six months.

Of the several boys in that establishment, I was the only one thus apprenticed. The others were simply employed, and received much higher pay than came to me, their object being only the usual returns that come from business. We boys could not agree in that my small pay did not result from my inferiority, a phase of the question that was to me somewhat humiliating. Then, too, I came from Kentucky while yet "the war" was in progress, when one coming from Kentucky into Cincinnati was demerited. Again, my dress at the beginning of my apprenticeship was not in accord with that of the other boys in the store. Among other things, I recall that in my section of Kentucky, it was customary for both men and boys to wear shawls in cold weather, and also in the rain. The shawl with which I came prepared, was a gray, heavy, country-made woolen shawl. Altogether it was a good protection from the cold and rain, but to my surprise, the boys of the establishment made this shawl, of which I thought much, the occasion for side remarks that were not very pleasant to me, and once, at the very begin-

* Dr. T. L. A. Greve, that accomplished Cincinnati pharmacist, often discussed with me this phase of pharmaceutical education. He fully agreed that my parents took the proper view of the problem.

†Known as "Stringtown," in my folk-lore studies of Northern Kentucky.

ning of my apprenticeship, when one day I started down town on an errand, Mr. Gordon suggested that it was not cold enough for a shawl! Looking back, I can see that he naturally felt a pride in his establishment, and felt that an apprentice boy wearing a shawl, was not exactly in good form.

As we left the store of Mr. Gordon that first morning, after the terms on which I was to enter had been settled, my father's parting remark was, "Mr. Gordon, be sure to see to it that whatever Johnnie attempts to do, he does right! If he does anything wrong, see that the work is done, over and over, *until it is right.* These words Mr. Gordon never forgot, as I learned from sad experience during the two following years. Many a window did I repolish as Mr. Gordon would say, "Remember what your father said. Do that again."

On our way home that day, my father stopped before a fruit stand at the corner of Fifth and Elm, on which were displayed the first bananas I ever saw. Pointing to them he said, "Johnnie, you must learn to deny yourself such as these. You must learn to pass, and not stop. The boy who cannot deny himself pleasures when young, will probably not have the chance to do so, when old. You are here to learn the drug business. This city has many attractions for a boy, other than fruit. Be very careful to make no bad companions. Do not go anywhere you would not like your mother to know about." That I profited by these suggestions, at least in part, is evidenced by the fact that for two years I passed that fruit stand daily, and never once did I stop.*

An attic room in a cheap boarding house, 199 East Third Street, eight blocks from the store, was secured for me. Here I lived during my first year, and was then taken to room and board with Mr. Gordon's head Prescription Clerk, Mr. Riefsnider, in the home of professor E. B. Stevens, Dean of the Miami Medical College, and Editor of the *Lancet and Observer.* As I look back, I see that this arrangement was not by chance, but that every effort was being made, by all concerned, to fulfill the arrangement made with my father. My duties seemed to be onerous and the hours were long, beginning at seven in the morning, and the first six months extending to nine at night, when, so tired was I that I could scarcely drag my feet to my attic room on Third Street. Every third Sunday I was allowed the day off, for the purpose of visiting my home in Kentucky. On these weeks, I was permitted to leave the store Saturday afternoon at three o'clock, and there being no regular conveyance at that hour, I usually walked to my home, ten miles back of Covington. Very often I walked back again Monday morning, in time for business. Often I lugged a carpet sack, carrying my clothes, which were washed and mended at home.

Most exacting was Mr. Gordon, and Mr. Riefsnider was not less so. No one spared pains in teaching me the "rudiments of pharmacy," but sometimes I felt that my duties, such as scrubbing the floor and washing the windows, were far from the drug business. My work was hard, but I made no complaint, and at the end of my first six months was highly elated when my salary was raised to $3.00 per week, instead of the $2.50 agreed upon.

One by one, opportunities were given me to learn the "business." Very awk-

* Bananas at that time sold for ten cents each, or two for fifteen cents. Not for two years did I indulge in the luxury of a banana!

ward was I to begin with, but very observing, and I flatter myself, rather expert at learning, and I quickly fell into the processes that at that time marked the beginning of an apprenticeship in pharmacy. The charging of the "Soda Fountain" became early a part of my duties. As I revert to this experience, I comprehend the danger I ran, from the complicated copper apparatus used to generate the gas, by means of "marble dust" and sulphuric acid. The pressure was eighty pounds, and the apparatus not new, but with the audacity of inexperience, I daily went through the process.

In the line of real pharmacy came, after some months, first, the reading of prescriptions, and the learning of the tables of weights and measures, with their uses. Standing by the side of the head clerk when he filled prescriptions, I watched him make the compounds, and had the reasons for the various mixtures explained to me. At last I was permitted to make the measurements for simple prescriptions, such as a mixture of Syrup of Squills with Syrup of Ipecac, and pour the mixture into the bottle, whilst Mr. Riefsnider watched the process, wrote the label, and numbered the prescription. I was drilled in the rolling of pills and in the selection of excipients, in the making of the medicinal syrups then in use, and in the beginning of pharmacy, as pharmacy was then practiced. That was the day of heroic medication. The spreading of plasters was continuous, and that process I soon learned. I would give much, now, for the old "Plaster Iron" I so frequently used in making the "Strengthening Plasters," "Diachylon Plasters," and above all, "Blistering Plasters," (Cantharides), to fit different parts of the body, such as the back of the neck, or behind the ears, all these being with us, constant necessities. In these rudiments, by reason of the help and advice continually given me by my preceptors, I soon became proficient, and when my two years of apprenticeship had passed, I found myself capable, in the absence of other clerks, of waiting upon the front store, and of "selling" simples, such as "senna and manna," epsom salts, and other remedies called for over the counter, and even of compounding simple prescriptions, where there was no question as to my understanding the same. By this time I had learned to make emulsions, to compound pills by means of the best excipients, to make suppositories with paper cones, in the old-fashioned way. In fact, I was fairly proficient, for an apprentice of two years' experience. I was also taught that I must become conversant with the natures of drugs, and especially of the poisons. I was taught, verbally, the qualities of the different agents, and I put in all my spare time, (none too abundant), in reading the Dispensatory. My chief opportunity for study came on Sunday, for on that day no business was permitted in Mr. Gordon's establishment, other than the compounding of prescriptions and the dispensing of legitimate medicines. No toilet articles were sold; no soaps, no soda drinks, nothing outside of medicine, formed a part of our Sunday business.

The time of my apprenticeship was much enlivened by almost daily encounters with the other boys and the under clerks. The fact that I was country bred did not escape their notice, and they took their own methods of initiating me into city ways. Once, in the absence of Mr. Riefsnider, who would not have tolerated such a process, one of the clerks sent me with an empty graduate to the hardware store two squares down on Central Avenue, for a pint of vinegar. As I returned

with the empty graduate through the front store where Mr. Gordon sat at his desk, he said, "Where have you been, Johnnie?" I replied, "To the hardware store, for vinegar." Said he, "They do not carry vinegar in the hardware store, here." Said I, "Where I was raised, every store carries everything, and when I was told to go to the hardware store for a pint of vinegar, I thought that was the place to go." Mr. Gordon smiled, and said nothing more.

In those days, all the employes were given the privilege, the middle of each morning, of a glass of soda. I was accustomed to suck my glass of lemon soda through a glass tube. One morning, when I placed this in my mouth, I found it coated with sulphate of quinine. Apparently not noticing anything wrong, I drank the bitter draught, and that joke failed.

It may be asked, "What has such as this to do with an apprenticeship in pharmacy?" Let me reply by saying that no incidents connected with my apprenticeship stand more conspicuous in my memory. I recall especially one boy, much larger and stronger than myself, who took particular pains to annoy and persecute me. I was undersized, rather feeble, and physically not his equal, as I found by experience. This having been settled, he should have known that, on honor, he was then bound to let me alone. In Kentucky, the boy who fought and was fairly whipped, was to be protected against such a bully as he. I dared him to go down into Kentucky, where I could beat him with the rifle, if I was not his equal with the fist, and I told him that until he dared face me fairly with a gun, I considered him a coward. I would give much to learn what has become of that boy, and what kind of a man he made of himself.

Gradually, as the days passed, the *drilling* that I got in different directions, interspersed with an occasional fight, made me self-reliant, as well as good-naturedly antagonistic, and before my two years of apprenticeship had passed, I had learned to take my own part, while in the things that should be learned, I was equal to any of the junior clerks. The lessons I learned were, in after life, invaluable to me. Thrown upon my own resources, almost an ostracised human being by reason of my Kentucky home and country dress and manners, I was made to take care of myself in the face of resistance such as comes to few.

My Second Apprenticeship.—But as yet I was not a *druggist*. Appreciating this fact, with Mr. Gordon's consent I apprenticed myself a second time to Mr. George Eger, an accomplished German pharmacist at the elbow of the canal, opposite the "Mohawk Bridge." At that date in Cincinnati, a drug clerk, to be proficient, needed to understand the German prescription business. With Mr. Eger I began over again, *from the very beginning*, for in Mr. Eger's opinion I had not as yet advanced very far in pharmacy. During the entire time of this second apprenticeship, my salary was three dollars per week, and board, for I had the privilege of boarding with the family of Mr. Eger, who occupied rooms over the store. Again it became my duty to wash the windows, graduates and mortars, and once a week to scrub the front store, a duty which was occasionally enlarged to the scrubbing of the kitchen, which thus became a part of my pharmaceutical duties. With Mr. Eger I had the same opportunity as with Mr. Gordon of visiting home every third Sunday, and in addition to this, I had the privilege of attending Professor Roberts Bartholow's lectures on chemistry at the Ohio Medical Col-

lege. These Mr. Eger felt were to me a necessity, and to his care in this direction I owe much.

With Mr. Eger, I was especially to be taught prescription pharmacy. He taught me not only the natures of the different drugs, but their doses and actions. He himself was extremely particular in this direction, and never did he fill a prescription till he was sure that the dosage was correct. In case he was not sure, he looked it up in the authorities then used, and I once saw him spend an entire hour hunting up the dosage of some obscure substance. After I myself began filling prescriptions under his care, he enforced upon me the same rule, and I was required not only to know the dosage of each remedy mentioned in a prescription, but the amount that would be an overdose. It was then the custom, among German physicians, in writing a prescription that carried a substance in what was, under ordinary circumstances, an overdose, to place above the prescription the "square root" sign, thus certifying to the fact that the prescription stood as it was meant to be.

As an apprentice with Mr. Eger I studied each night, beginning at eight o'clock, the Dispensatory record of some drug selected by him. The next night I wrote from memory a description of that drug, including its origin and history, its uses and doses, and if a poison, its antidote. The next evening he would review what I had written the previous night, criticising and correcting it, emphasizing oversights. Then another drug was named, to be studied in like manner. With Mr. Eger I learned every detail possible in the handling of medicines, the compounding of prescriptions, the making of tinctures and syrups, and the powdering in an iron mortar and sifting of crude drugs, for in those days we powdered our own drugs. All this I was forced, or I might say, was permitted to learn, in this second most exacting apprenticeship, embracing, in the aggregate, practically everything that came in the direction of pharmacy in Cincinnati. At the end of this period, Mr. Eger informed me that he considered me competent to engage anywhere as a prescription clerk, and indeed I would have been dull, could he not thus have expressed himself. He was accomplished in languages, science, medicine and pharmacy. He had accepted the responsibility of making me a pharmacist. Conscientiously, for months, he had drilled me in the art. We came to be companions. As a teacher, he was not less concerned in fitting me for my profession, than was I as a student. He considered his reputation at stake, and that he must fulfill his part. I came to understand that I, too, had a responsibility, and that unless I learned pharmacy, I would discredit both Mr. Gordon and Mr. Eger.

The stores of both Mr. Gordon and Mr. Eger were the headquarters for physicians. Discussions concerning drugs and pharmaceutical preparations, old and new, were constant. The uses and doses of remedies were alike the part of pharmacist and physician. With every prescription, I was taught to study the Dispensatory and other books of reference, to see if the dose was correct. More than once, in after years, did this watchful care serve the interest of the physician. But *only in emergency cases* did either of these preceptors ever presume to give an ailing person a remedial agent. They held that the *prescribing* was the part of the physician. This became my invariable rule, and during my entire course as prescription clerk, some fifteen years in all, I cannot recall ever breaking this rule.

At the conclusion of my work with Mr. Eger, he wrote me a recommendation that I much prize, as I do that of Mr. Gordon. I then returned to Mr. Gordon's employ, Eighth and Central Avenues, where the opportunities for business progress were greater. As Mr. Gordon did not then need my services as a clerk, he gave me at first a position as a "supernumerary clerk," in which I served, without salary, for the experience. But within a few weeks, one of the assistant clerks resigned his position, and I took his place, at six dollars a week. My salary was gradually raised to ten dollars a week, which seemed to me a very lucrative return, considering the fact that all this time I had been learning a professional business, in which I proposed to spend my life. Let me add that I take not a little pride in that, from the time my salary reached the sum of six dollars per week, I saved a goodly portion, each week.

Including these four years' apprenticeship, I clerked for nearly fifteen years, until, under the auspices and the advice of physicians whom I regarded as qualified to direct me wisely, I finally, considering myself still an apothecary, united my efforts with manufacturing pharmacists. It was during the '70's that my devotion to chemistry and pharmacy, and my acquaintance with medical subjects connected with pharmacy, led Professor John King, M. D., author of the *American Dispensatory* and other publications, to arrange with Mr. H. M. Merrell that I should take charge of the laboratory of H. M. Merrell & Company, my salary being fifteen dollars per week, which was gradually increased to twenty-five dollars. I will add that my chief reason for accepting this position, (which Dr. Stevens and others approved), was the great, unworked field of plant remedies, chiefly American, used by the Eclectic physicians. Indeed, Dr. King had made this his principal plea in urging my acceptance of the arrangement.

As a completion to the record here given I will state that I passed an examination before the Cincinnati Pharmacy Board, the first established in Ohio, and that I attended the first meeting of the Ohio Pharmaceutical Association, called for the purpose of forming a State Society. Every two years since the date of my first examination I have renewed my certificate, and am yet a licensed Ohio pharmacist, though I fear I would be sadly in need of another apprenticeship course, were I to attempt to become a clerk in a modern apothecary shop. My two brothers, Nelson Ashley and Curtis Gates, likewise took the apprenticeship method of learning the pharmacy business. Both served for years as drug clerks, both are registered pharmacists in Ohio, and neither has allowed his certificate to lapse.

Resume.—It need not be said that I now comprehend, as I could not then, that the greatest advantage in my training as a pharmacist, came to me through the thoroughness of the drilling I received, beginning at home, and the exacting methods of my preceptors. Under these I learned self-reliance and restraint, in directions that otherwise would never have come. The very rivalries between the other boys and myself were useful, even the occasional rough usage that came in the beginning of my efforts. Sometimes, on my infrequent visits home, I would be utterly discouraged. But my mother would comfort me by teaching that after a time I would be free,* and have a business for myself that would make

*The word "free" is used in its sense as applied to a bonded apprentice

me a living. Back I would go to work, hopeful and ready to meet whatever came, and I will add, always something new *came*.

I often wonder if the boy of today appreciates the educational opportunities at his command, such as the Colleges of Pharmacy, the Universities, the pharmaceutical journals, the Society meetings, the shorter hours, and the greater recreative opportunities, with which the present seems to me to contrast so markedly with the days of my apprenticeship. I wonder, too, if the apprentice of today, and the pharmacist as well, comprehends the advantages he enjoys over him of times gone by. Then, our time was largely spent in preparing remedial agents, such as tinctures, syrups, wines and vinegars, for incorporation into prescriptions. To make these, we were forced to grind and powder the crude drugs. We were busy rolling pills, making emulsions, spreading plasters, preparing suppositories and like agents that, before the days of the pharmaceutical factory, were a daily necessity. Well do I remember when *atropine* was introduced, for dilating the pupil of the eye. It came to us in the form of the alkaloid itself, and the pharmacist made it soluble with the exact amount of dilute sulphuric acid required, a very delicate process. The favorite prescription of physicians, (this was before the day of professional oculists), was one-half grain of atropine, water one ounce, sulphuric acid q. s. to make a solution. Bear in mind that this was for use *in the eye*.

In reviewing those days long past, I prize above all else, notwithstanding the hardships I then endured, the four years of personal drilling from my accomplished preceptors. To their pains-taking care, and to the habits of close observation and industry they engendered in me, I feel I owe a large measure of whatever success I have attained, as well as the privilege of contributing to pharmaceutical advancement. Well do I recall one of the visits Mr. Eger paid to my laboratory some years later. With great pride I brought to him specimens of interest, and explained my manipulative processes. Placing his hand on my head, he said, "Johnnie, I once taught you in pharmacy; now you are teaching me!" Could any apprentice have received a greater reward for his efforts? Nor can I express the pleasure that came to me in after years through the friendship of Mr. Gordon. He it was who introduced me to the American Pharmaceutical Association where, each year that I am privileged to attend, a host of friends greet me, though now, alas, a host of those who once were friends, are now missing. Very painful to me are some phases of these meetings. I see many faces unseen by others, to my ears come voices no others hear.

As a conclusion to this paper may I not, in the spirit of gratitude, present the portraits and brief biographies, written in 1894, of my two masters in pharmacy, W. J. M. Gordon, and George Eger, whose memories I so deeply revere?



WILLIAM JOHN MACLESTER GORDON,

was born in Somerset Co., Md., December 25th, 1825. When a lad, he entered as an apprentice the pharmacy of his cousin, Dr. J. W. W. Gordon, in Baltimore. While there he studied Chemistry in the University of Maryland, under Prof. Aiken. In 1848 he removed to Cincinnati. He was young, ambitious, persevering, energetic and capable. Beginning as a retail pharmacist, he soon branched into manufacturing, the firm being W. J. M. Gordon & Bro. He established the pioneer Glycerin factory of the West, and soon his name became known over the entire country as a manufacturer, a pharmacist, and wholesale druggist. Within a period of five years his factory was burned to the ground four times, and he ultimately gave up the drug and medicine part of his business, confining himself to Glycerin, making large amounts of a quality second to none in the world. Mr. Gordon still gives this business his personal attention and carries a warm feeling for his early study, Pharmacy; about the only vacation that he takes, being to attend the meetings of the American Pharmaceutical Association.

Mr. Gordon has been President of the American Pharmaceutical Association and has always held offices of position in that organization. In his energetic prime no man was more worthy of emulation, now, when at mature age, no man commands a deeper regard. He is an ardent worker in the Episcopal Church, a kind father, a genial conversationalist and a citizen of whom the community has ever been proud. To his family, consisting of a wife, three daughters and one son, Mr. Gordon has devoted his life. As an instructor, I received from him my first pharmacy instruction, and deem it an honor to offer this tribute of respect.—J. U. L.



GEORGE EGER,

was born August 7th, 1836. He was educated in Rottweil, Ellwangen and Ehingen. He entered the drug business as an apprentice in Esslingen, Germany, and after apprenticeship clerked in Stuttgart, Germany, and Geneva, Switzerland. Coming to America in 1855, he located at Madison, Ind. From there he went to Terre Haute, Ind., and then to St. Louis, Mo., after which he returned to Europe and attended a term in the University of Tuebingen, then returned to Covington, Ky., where he married. In 1863, he located in Cincinnati, on Central Avenue, near Mohawk Bridge.

Mr. Eger has more than once been elected President of the Cincinnati College of Pharmacy, and since its organization has been a continuous devotee to its interests. He has often contributed thereto from his private resources, and has every year served either on the Lecture Committee, the Examination Committee, or as a Trustee of the Institution. He is a member of the American Pharmaceutical Association, and a conspicuous example of many apothecaries who love their calling, not alone because of material returns, but also on account of the unselfish devotion they bear to a cause they love.

Mr. Eger has a family of seven children, and in addition has adopted five orphan children. A conscientious apothecary, he still delights in his work, and it is with pleasure that I recall the pains with which, after my course with Mr. Gordon and while I was still an apprentice, he instructed me in the details of the art.—J. U. L.

These sketches were written in 1894. Since that date both Mr. Eger, (1900), and Mr. Gordon, (1909), have died.—J. U. L.

Section on Commercial Interests

Papers Presented at the Sixty-Third Annual Convention

THE CIRCULATING LIBRARY AS A SIDE LINE FOR DRUGGISTS.*

FRANKLIN M. APPLE, PHAR. D.

Competition has become so great in the drug business that druggists, almost without exception, are on the lookout for profitable side-lines wherewith they can increase their incomes. As can be observed on every side, various forms of side-lines (some appropriate and others inappropriate—in fact some a disgrace to our calling) have been decided upon and given a trial to test their earning value.

In presenting for your consideration the circulating library as a desirable side-line, I am aware of the fact that I am not setting forth an untried source of of revenue, for many of you may have one in service in your places of business. My main object in presenting this paper is that our experience with a circulating library may offer to you a new thought or two which may be helpful in the management of the one you have installed, or may install.

The first decision one must render when approaching this subject is the legitimacy of such a side-line in a drug store. Customs make laws, and competition oftentimes, compels those upon whom rests the obligation of providing the necessities of life for the household to search out added sources of revenue, wherewith to augment their incomes from their drug business. As the drug business is properly classified as a branch of one of the learned professions, anything that is of an educational nature, uplifting mankind and adding to the general store of culture of our citizens, can be classified as a legitimate side-line to a professional-commercial enterprise. If we compare the circulating library with some other side-lines that find their way into the shops, designated by the honored title, Pharmacy or Drug Store, it becomes apparent at the outset, that it is one of the least objectionable auxiliary sources of revenue that a druggist can adopt.

The second question that must be decided is whether it is wisest to provide one's own library, or to serve as the agent of a trustworthy concern that will co-operate honestly and heartily with you. After very careful consideration of this phase of the subject, we came to the conclusion that our interests would be served best by accepting the agency of a reliable, responsible concern that maintains headquarters in our city.

It may appear very strange to you that we chose the agency of a concern over which we had no control in preference to being master of the situation

*Read before Section on Commercial Interests A. Ph. A., San Francisco meeting.

absolutely; but we found with the agency we could with diplomacy, more effectively control our customers as to rules, regulations, rates, excuses for inability to immediately supply a desired book, collection of rentals and charges for lost or destroyed books; and stood less liability of giving offense to our patrons, with the resultant loss of trade in other departments, including our legitimate and chief line of work, drug and chemical sales, prescription compounding and dispensing. We installed our circulating library with a determination to give the owners thereof a square deal and demand similar treatment in return. I am very happy to report that our relations with the owners, through their managers, has been uniformly, mutually satisfactory.

When we had demonstrated that we were truly co-operating with the other party to the contract, for mutual pecuniary gain, we received from them the greatest possible degree of satisfactory service to ourselves and to our patrons. Being wide-awake business men they fully realized their opportunity, and endeavored to derive the richest possible harvest from the field that we provided for their commercial venture.

The book case was given a prominent position in the salesroom, so located that young children could not reach the volumes (incidentally I will state that it was demonstrated that it is poor business policy to provide juvenile books for young readers, for several reasons which need not be mentioned here.)

The title of each and every book was recorded when received in a ledger arranged alphabetically, in front of which title the date of its receipt was noted. When it was returned to the messenger, who brought the weekly supply of new books, the date of its removal from our library was inscribed, thus giving us a complete record of its arrival and its removal.

A list was kept of the number of books received, also one of those returned each week, giving us at all times a summary of the number of books we were charged with by the owners thereof, from which we could readily check up the stock on hand, as we kept a detailed record of all volumes leaving our store.

Another record was made of the total earnings of the library; also of our income from the same (we received 25 percent of all moneys collected) whereby we could readily observe the progress being made with it, from a financial standpoint. As we were not held responsible for books that were lost, of which we had a record as to the lessee thereof, the commissions received were net income. We were never asked to pay for any books that we could thus account for, and none others disappeared.

A list of books desired by readers was kept on a loose sheet of paper, the titles of which were sent to headquarters once a week, several days prior to the day when the messenger called for delivery of new books and removal of undesirable ones. As several of the daily papers contain weekly reviews of the new books of fiction, we were able to keep posted as to titles and obtain information regarding them. Catalogues of recently printed fiction, procurable at first class book-stores were also helpful to that end.

Several days prior to the day for exchange of volumes, we sent out courteous notes to those patrons against whom were charged any of the works of fiction, requesting prompt return of the same if they had finished reading them. This

frequently brought forth expressions of thanks together with the books, as they had laid them aside carelessly, and having neglected to return them, the charges thereon were accumulating.

A list of those patrons who had proven themselves unworthy to be entrusted with the custody of a book was kept on hand for ready reference and their requests for books were treated accordingly oftentimes with beneficial results.

As some works of fiction are not of the class of reading matter that one would care to have found in his (or her) possession, it is wisest to prevent their finding a resting place upon the shelves. Care must be exercised that young maidens are protected from the baneful influence of reading matter of a suggestive character.

The high standing of the prescription and drug department should be reflected in the library, for then it will be a credit to your name and an aid to your place of business. I can recall a number of desirable, intelligent, profitable customers we gained through our library; hence it can readily be seen that its benefits extend beyond its own field of usefulness.

Care must be exercised that the books do not become the innocent carriers of malignant disease germs. Where no efficient board of health is provided to safeguard the public health, extraordinary caution must be used to see that no epidemic can be traced to your library.

If you take proper interest in a circulating library, treat it as a commercial enterprise, use the censor's blue pencil judiciously and play fair with all concerned I feel certain that you will find this a satisfactory side-line and one that will add materially to your income.

THE VALUE OF CONCENTRATING AND INDEXING YOUR DRUG STOCK.*

MAURICE P. SCHWARTZ.

Owing to the rapid development of the commercial end of the drug business, the prescription department, or back part of the store, is being called upon to carry practically all the drug stock, the front of the store being given over to the sale of soda, cigars, candy, magazines, photo supplies, stationery, drug sundries and various other side-lines. This condition has been largely brought about by the curtailment of the use of drugs, the employment of high priced preparations in the filling of physicians' prescriptions, and cut rates in general, so reducing profits, that additional revenues have been made necessary to meet the ever increasing overhead expense.

To remove the drug stock to the prescription department every available inch of space must of necessity be made use of, and the stock so arranged, as to be found as quickly as possible. The best method of course is to thoroughly index all the items in the prescription department, and in the case of those drugs and preparations having several common names, to list them under each of these,

* Read before Section on Commercial Interests A. Ph. A., San Francisco meeting.

and also to list the articles in the index alphabetically, regardless of classification, as often, when having several customers waiting, the classification the article comes under cannot be recalled instantly.

We are living in a swift age, people hardly take time to eat any more, and they are not willing to stand around, and wait for five or ten minutes before being served. Druggists depend entirely too much upon their memory in locating their stock. Owing to the thousands of different items carried, and the infrequent demand for a majority of these, it is impossible to remember where all the articles are, especially those which are difficult to classify. Another problem today is the retaining of good clerks and a great many sales are lost before the new clerk learns the location of the stock besides his wasting much valuable time and also causing customers to become skeptical of his knowledge of the drug business, or becoming suspicious of not obtaining that which they asked for. These conditions are overcome if you maintain a complete index. Numbered sections four or six feet wide, and from the floor to the ceiling are entirely too large to be of much benefit, as considerable time is consumed in finding the article after having located the section given in the index. The spaces numbered, should be reduced to a very small area.

Space in the front part of the store is entirely too valuable to take up with drug stock, which does not need to be displayed. By arranging artistic displays of toilet articles and various side lines carried, many sales will be made of articles which the public probably otherwise would not know you were handling.

Rental, and overhead expense in general, continue to increase yearly, and it is necessary to increase the volume of your business, to keep up with these growing expenses.

THE COLLOIDAL STATE OF ALKALOIDS AND THEIR PHARMACOLOGICAL ACTIVITY.

In the first stage of the investigation of this subject, the relation between surface tension, size of particles, and toxicity is dealt with. The aqueous solutions of free alkaloids whose molecular weight exceeds a certain limit are colloidal. The surface tension of such solutions is lower than that of water. The toxicity of the solution towards fish and tadpoles is proportional to the lowering of the surface tension, so that the degree of activity may be measured by a stalagmometer. In those alkaloidal solutions which are not stable, the size of the particles and the surface tension increase with a corresponding decrease in the toxicity. The surface tension is altered by change of temperature or by the addition of antagonistic substances, or of acids. Decrease in surface tension and in the size of the particles is accompanied by increase of reaction velocity and toxicity under the conditions of the experiments. Local action of alkaloidal salts is attributed to increased alkalinity at the area of contact causing liberation of free alkaloid in the colloidal state.—*J. Traube and N. Onodera (Intern. Zeit. phys. Chem. Biol.; Chem. Abstr.*, 1915, 9, 2,108.)

Editorial

E. G. Eberle, Editor..... 63 Clinton Building, Columbus, Ohio

EMERGENCY REVENUE LAW AND PLANS TO PROTECT THE AMERICAN MANUFACTURER.

THE program of the next Congress, at this writing, seems to include: The re-enactment of the emergency revenue laws; the repeal of that provision of the sugar schedule which would place sugar on the free list May 1, 1916; the issuance of bonds to meet the increase in the army and navy appropriations; the enactment of the anti-dumping clause of the Underwood Act, which was reported favorably by the Ways and Means Committee at the last session of Congress, but was stricken from the measure by a viva voce vote of the House; an export duty on munitions.

The provision of the Underwood bill states that a special or dumping duty equal to the difference between the export price and the fair market value shall be paid whenever articles of a kind made in the United States are imported into this country if export value is less than the fair market value, in addition to established duties; provided that the special duty shall not exceed 15% ad valorem, and that goods shall be exempt from such extra duty whenever established duties are equal to 50% ad valorem. The export price at which such goods are consigned are held in this measure to mean the exporters' price for the goods exclusive of all charges.

Secretary of Commerce Redfield's plan for dealing with the dumping problem is embodied in the following: If foreign countries attempted to ship goods into this country at a greatly reduced price the United States consular agents could demand the right to investigate the means of producing the commodity to see if the manufacturer was selling at a lower price than he should. If the agents were refused the right to make such an investigation, the American Consuls could then refuse to sign the manifests and the products could not leave the ports for the United States.

President Wilson is said to favor the Underwood bill.

Druggists are largely interested in the re-enactment of the stamp tax portion of the revenue measure, and while it may be next to impossible to avoid the present assessment, every effort should be made to prevent the inclusion of other stamp tax.

Secretary Redfield's plan of protecting the American manufacturer involves the difficulty of proving that the sale price of foreign goods in this country is less than their cost price in the country of their production. The producer's assistance in arriving at such cost might not be forthcoming and his punishment, being a citizen of a foreign country, seems also to offer further difficulties.

The evil against which this measure is aimed is more or less illusory. European nations, when peace is declared, will undoubtedly seek to regain their lost markets and resort to every possible economy.

Their industrial population is inured to economies and low wages and this applies also to their chemists; their chemical as well as other industries are fostered by the government. In this country the industries, especially if corporations, are hampered in one way or another, particularly by laws, and when a strong effort is made to develop trade which is productive of results, higher wages or less hours are demanded—there is the lack of the right kind of co-operation.

Coming back, however, to the assertion that the anticipated condition is more or less illusory, there would certainly not be economy in selling at less than cost, but extravagance, and such folly will hardly be indulged in by a nation whose debts have multiplied and where increased taxation is mandatory. We do not overlook the fact that their object might be to discourage the American manufacturers, but the purpose will be so evident that our manufacturers should be able to play the game of trade with them, even buying their stock for resale, while the foreigners are disposed to sell goods below cost of manufacture.

Another measure, which is more practicable and certainly encouraging, is the proposed amendment to the Clayton Act, permitting manufacturers in this country to organize selling agencies abroad. Similar plans have largely contributed to German industrial success. Germany, in its laws, first recognizes that combinations may do harmful acts and then provides for useful and beneficent combinations by permitting organizations under supervision and control of manufacturers and merchants into syndicates, by which the products of all members are marketed.

Our anti-trust laws have as the one object the prevention of the possibility of harmful combinations, practically drag-nets which seemingly propose, that rather than have one harmful one escape, to destroy those that are beneficent if necessary to accomplish the "seeming" chief purpose. The American chemical and drug industries can be promoted by aid of university research laboratories and government co-operation, and now is the opportune time for their development. As Mr. Geo. W. Perkins very forcefully says and repeats, "let us prepare for peace."

E. G. E.

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THE WORLD'S RECORD FOR PERSEVERANCE.

THAT the world had recognized the great naturalist, Jean Henri Fabre, was evidenced by the press of every country, when they announced in important headlines the passing away at the age of 92 years, of this unique genius. When a great scientist has practically lived in obscurity for eighty years of his life, notwithstanding that his work merited recognition during the greater part of this period, such unusual occurrence is deserving of mention in these pages, even though his studies were not intimately associated with pharmacy.

The world was not altogether to blame for the obscure life led by this investigator and author, for he preferred to live in seclusion, persistently studying and observing smaller animal life in all of its relations, so that Darwin in acknowledging Fabre's thoroughness in the minutest details, named him "the inimitable observer." It was not until 1910 that the home of this naturalist in the obscure little village, Serignan, became a Mecca for pilgrimages to the shrine of the

"Homer of Insects." The highest dignitaries of his own country and scientists from all over the world flocked here to do him homage and in the same year a great public demonstration was held in his honor.

He might have had more general and earlier recognition, for Pasteur sought him out as early as 1865 to secure his help in a silkworm plague under investigation. The haughty manner of Pasteur however was not compatible with the independent nature of Fabre, or perhaps, this should have been stated reversely. The latter would have excluded from his presence the man of rank and admitted the humblest scholar seeking for information, according to the dictates of his judgment or prejudice of the motives of the two. He was offered the private tutorship of the son and heir of the third Napoleon, but the gruff scientist declined the honor, because it would have diverted his study, although he was experiencing the pangs of poverty.

The famous naturalist chose to labor in one of the humblest of sciences in which a neglected division, the study of instinct, particularly attracted him. He lived to see the future of great results from his investigations, and entomology, as a department of science, exalted. Though his work was the most exacting, the one instrument of value he possessed, until very recent years, was his microscope. He studied insects in their minutest detail and then wrote of them in an intensive, vivid style, of their terrible instincts, their murders, their struggle for existence. He once said, "I write above all things for the young. I want them to love the natural history which you make them hate, and that is why, while keeping strictly to the domain of truth, I avoid your scientific prose."

Edmond Rostand has spoken of Fabre as the great scientist, "who thinks as a philosopher, sees as an artist, and feels and expresses himself as a poet." Dr. C. V. Legros named him "the poet of science," and quoting the same author in his biography:

"His gaze has penetrated even the most hidden dwellings, those in which the Halictus varnishes her cells and makes the round loaf which is to receive the egg, in which, under the cover of cocoons, murderous grubs devour slumbering nymphs; even the depths of the soil are not hidden from him, for there, thanks to his artifices, he has surprised the astonishing secret of the Minotaur.

"He sifts all doubtful stories; anecdotes, statements of supposed habits; all that is incoherent or ill observed or misinterpreted; all the 'cliches' which the makers of books pass from hand to hand.

"In place of repetition, he gives us laws, constant facts, fixed rules.

"He sets himself to decipher the meaning of old tales, skillfully disengaging the little parcel of truth which usually lies beneath a mass of incorrect or even false statements. He criticizes La Fontaine and questions the statements of Horus, Apollo and Pliny. From a mass of undigested knowledge he has created the living science of entomology."

The brief abstract will be pardoned because it so nicely depicts the development of a science.

Fabre published quite a number of elementary and popular books of science, his greatest work, Souvenirs Entomologiques, was crowned by the Institute of France.

Though Scheele was a different character and lived less than half the number

of years granted to Fabre, the two scientists have some striking characteristics in common; a sacrificing devotion held them to their work, spurning other distinctions and honors, limited means for investigations with the production of nearly unlimited results that shaped the respective departments of science in which their activities were so pronounced. Truly both are great examples of perseverance and achievement.

Permit the further deduction from the life of both, that information has greatest value only, when it is applicable for the development of general intelligence, which makes industrial and scientific application possible. E. G. E.

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TRADE-MARKS AND TRADE-NAMES.

AN interesting sidelight on the inconveniences that may result from the now all too widespread attempt to appropriate the use of arbitrarily coined words as trade-marks is given in a recent note by W. Heubner (Therap. Monat. 1915, v. 29, p. 475). From this note it appears that the German army medical supply includes averred substitutes for aspirin, antipyrine, pyramidon, veronal, urotropin and several other widely used articles of a proprietary nature. This has become necessary because the medical officers at the front, without access to books or to well-informed pharmacists, are frequently at a loss to find the exact chemical or official title for the article of a proprietary nature with which they are otherwise thoroughly well familiar. The German army supply department recognizing the existing need has been furnishing both tablets and powders of proprietary chemicals in packages with wrappers bearing on them, in addition to the full official title, such as "Dimethylaminophenyldimethylpyrazolon," the statement "substitute for pyrazolon" with an indication of its origin, giving the number of the sanitary depot and the town or city in which it is located. Heubner points out that sooner or later the protected name for a proprietary becomes the generally accepted title for the drug or preparation and that while legal authorities may differ as to when this transformation takes place, the fact that it does take place is generally accepted and even in connection with the German trade-mark law, which provides for the registration of trade-names, this protection can extend only for a limited period of time. The same principle has already received official recognition in England, where the Board of Trade has declared aspirin, lysol and several other widely used titles of so-called new remedies to be public property and therefore open for general use.

In our own country where names of compounds are not recognized as legitimate trade-marks an effort has been made to establish them as such and to maintain proprietorship in articles because of the registration of a trade-name as a trade-mark. This practice would appear to be in contravention to that portion of the trade-mark law which provides that no mark may be legally registered which consists merely in words or devices which are descriptive of the goods or the character or quality of the goods rather than as a mark of origin. The world-wide agitation or dissatisfaction with established practices in connection with the use of trade-names promises to bring about far reaching changes in our conception of equity and right in the proprietorship of coined words.

M. I. W.

COMPOUND DIGESTIVE ELIXIR.

CONSIDERABLE space is devoted in the Journal of the American Medical Association to the Compound Digestive Elixir of the National Formulary and a proprietary preparation of that type.

We quote the conclusion of one of these editorials under the caption of "The N. F. Imitation of Elixir of Lactopeptine," as follows: "Thus the druggist is invited to emulate the followers of Mrs. Eddy in substituting for inconvenient knowledge a cheerful faith which seeks not to dissolve a profitable mystery. Pharmacists should not be too severely blamed, however, for adopting such an attitude; manufacturers and dealers in drugs are, after all, merchants, whose profits are in a general way directly proportionate to the amount of goods they sell. The pharmaceutical profession, however, will do well to remember that pharmacists themselves will suffer in the end from the reaction in the minds of the medical profession and the public if they persist in disregarding what they know to be true for the sake of what they find to be profitable."

We do not desire to discuss the merits of the preparation but do deny the allegation that the dispensing of this elixir is encouraged by *pharmacists* because it offers a greater or less profit. Such statement ought to have been omitted. Pharmacists can not question the right or judgment of physicians in prescribing an elixir for which there is, and has been for many years a large if not increasing demand.

We will not question that the prescribing by physicians of proprietary preparations of this type suggested the inclusion of a formula in the National Formulary; there was, however, this purpose in the minds of the pharmacists, of acquainting physicians with the components entering into this preparation. In devising the formula, they used the utmost care to have the product represent the activities of its constituents.

We admit that the name by which this preparation is now known should not have been employed, and the present revision of the National Formulary corrects this by assigning the title, "Compound Elixir of Pepsin." While we may anticipate the answer, that this does not change the character, it is a correction which should be made; as heretofore, the prescribing thereof comes within the province of the physician and the pharmacist would be derelict if he did not discharge his duty. E. G. E.

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MR. GODBOLD'S NAME OMITTED.

THROUGH an unfortunate error in typewriting the report of the nominating committee, the name of our honorary president, F. C. Godbold of New Orleans, who was regularly nominated for membership in the Council at the San Francisco meeting, was omitted from the report and therefore from the official ballot and the omission was not detected until the ballots had been sent out to all of our members.

The oversight is deeply regretted, for while the distinction of being elected as honorary president shows the high esteem in which Mr. Godbold is held by the members of the Association, that very fact makes the error more regrettable.

That he will be selected as a candidate for the council at the 1916 meeting seems a foregone conclusion, since the member who submitted his name at San Francisco reserves the right to renew the nomination at Atlantic City. In the meantime, we are glad to note that his present term as a member of the Council does not expire until next year. W. B. DAY.

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YEAR BOOK OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The second volume of the Year Book of the American Pharmaceutical Association has recently been delivered to the members, and, no doubt, has met with a cordial welcome from everyone. Whatever the cause of the delay in delivering the volume may have been, it will gladly be overlooked in consideration of the neatness, elegance and exhaustiveness of the book. The venerable Reporter on the Progress of Pharmacy, Professor C. Lewis Diehl, has once more shown his devotion to Pharmacy, and his unsurpassed efficiency in the work that has been under his care for so many years. From the subject matter of the book, it is hard to say to what extent the author is indebted to his co-laborers,—Harry V. Arny, Linwood A. Brown, Ernest C. Marshall, Otto Raubenheimer, Clyde M. Snow and Martin I. Wilbert; but without doubt each one of them deserves part of the credit of having produced such an excellent and serviceable book.

Considering the great number of pharmaceutical laboratories all over the world,—in the various colleges and universities, in the manufacturing houses and in the private studies of hundreds of co-laborers,—and the willingness with which the pharmaceutical press publishes the results of pharmaceutical research and inventiveness, the most serious question that confronts the Reporter on the Progress of Pharmacy is not what to put into the book, but what to leave out. Limited to a certain space, he must exercise judgment in selecting what is useful, serviceable and instructive. It would be much easier for him to present a volume of double or three times the size, by simply reprinting what he finds in the Journals of the various countries. In the selection, Mr. Diehl has always shown the best of judgment, and he also understands, in a most wonderful way, how to present the subject in a clear and concise manner, without ambiguity or unnecessary embellishment.

It has sometimes been stated that American Didactic Pharmacy is trying to run away from daily practice, and soars to heights that are unattainable to the everyday pharmacist. It appears to some, that the tendency of commercializing pharmacy in too marked a degree creates on the other side the desire for higher aims, more extensive knowledge, and depth and broadness of research and investigation.

It is not here the place to discuss this question, but it may well be stated that our Reporter succeeded in finding the proper mean between the two extremes paying attention to both tendencies of our profession, and giving each side the desired information and instruction. We congratulate our friend, C. Lewis Diehl, most heartily on the completion of this excellent volume, and we also congratulate the Association on the possession of so able a Reporter and so excellent a book. W. C. ALPERS.

Contributed and Selected

PRESCRIPTION PRICES IN NEED OF REFORM.*

HARRY B. MASON.

Prescription pricing is greatly in need of reform throughout the country. As a rule druggists charge considerably less than they should for their prescription work. They do not know what their costs and expenses are, and their selling prices are accordingly not based on real information. Often, indeed, they follow a flat system of pricing regardless of variations in cost, and utterly without any knowledge of the yield in profit—or lack of yield. Many of them, too, have failed to advance their figures in keeping with the rising scale of costs, and are selling prescriptions exactly as they were selling them twenty years ago. Between different druggists and different cities, moreover, there is the widest possible disparity, and so it is that the whole question of prescription pricing is in a state of utter chaos and confusion.

With this somewhat damning indictment to start with, let us consider for a few minutes a very interesting investigation reported upon at the last meeting of the American Pharmaceutical Association in San Francisco. F. W. Nitardy, of Denver, collected the facts about 10,000 prescriptions—1000 each, presumably, from ten men. Now passing over the ten separate tables of Mr. Nitardy, let us give the table of averages based upon the whole showing:

Estimate of hours required for compounding 1,000 prescriptions	215½
Cost of material	$183.07
Estimated cost of time	81.48
Cost of containers	26.75
Estimated overhead expense	75.54
Total cost	$366.84
Price received	504.60
Cost	366.84
Gross profit	137.76
Percentage of gross profit on selling price	27.3%

Now the actual facts in this table are most interesting, but Mr. Nitardy has handled them inaccurately. At the end of the table he arrives at a percentage of *gross profit* of 27.3. But this isn't a gross profit at all. Neither is it a net profit. It is not a gross profit because already the "cost of time" and what Mr. Nitardy calls "overhead expense" have been considered. And it is not a net profit because, while some of the expenses of the store have been deducted, all of them have not.

Mr. Nitardy's profit calculations, indeed, are very difficult to follow. He takes this 27.3 percent of apparent gross profit as a starting point, and then argues that you must deduct something like 25 percent from it to cover man-

*Read before Detroit Branch A. Ph. A. October 14, 1915.

agerial and administration expense. Thus he assumes that a *net profit* is left on these prescriptions of only 2.3 percent.

Of course this is a startling condition of things if true, and it is no wonder that it had the A. Ph. A. by the ears out at San Francisco, and that the whole question of prescription pricing was discussed off and on during the entire week. Now prescription profits are low enough in all sincerity, but they aren't as low as this.

Let us take the real facts contained in Mr. Nitardy's table of averages, covering 1000 prescriptions, and let us work out a revised table leading up to accurate conclusions:

Cost of material	$183.07
Cost of containers	26.75
Cost of labor (215½ hours)	81.48
Cost of general expense (outside of labor)	100.92
	$392.22

Price received	$504.60
Total cost	392.22
Total profit	112.38
Percentage of net profit	22%

Thus we find that these prescriptions actually yielded a net profit of 22 percent instead of 2 or 3 percent.

It may be asked, though, how I have arrived at the "cost of general expense" in the foregoing table. Well, let me explain first that Mr. Nitardy has divided his expense into three classifications—(a) labor or time consumed in actual dispensing, (b) overhead expense, and (c) managerial and administration expense. This is a somewhat unnecessary division, and Mr. Nitardy's figures are furthermore too high.

Following a different and simpler method, I have handled the question of expense in two divisions only—labor on the one hand, and all other expense, of every sort and nature, on the other hand. Mr. Nitardy gives an estimate of cost of labor, and I have accepted his figures without change. It only remains therefore to ask how I have arrived at the remaining expense.

Well, the average percentage of expense in a drug store is something like 28: it is lower in a big store and higher in a small store. The average of clerk hire, on the other hand, is about 8 percent. Inasmuch as the clerk hire is separately itemized and taken care of under the classification of time or labor, we deduct 8 percent from 28 and we have 20 percent left. This 20 percent covers absolutely every bit of other expense connected with the store—proprietor's salary, depreciation, collection losses, rent, light, heat and everything else. Twenty percent of the total selling volume of $504.60 is $100.92, and the latter figure is therefore put down as the "cost of general expense" in the foregoing revised table.

Now there are some other interesting conclusions that may be drawn from the table. Here they are:

Average sale price of the 1,000 prescriptions	$0.50
Average cost of material and containers	.21
Average gross profit	.29
Average expense, both special and general	.18
Average net profit	.11

Just how characteristic these facts are it is a little difficult to determine. I gather that Mr. Nitardy collected his statistics from ten druggists, and that each reported on 1000 continuous prescriptions. Apparently all ten men lived in Colorado, and apparently also they were fairly large and successful druggists or they wouldn't have had the facts ready for compilation. It would seem therefore that what we have found out are the prescription averages merely of ten selected druggists.

I am rather inclined to believe, although I have no figures just now to back up the assertion, that druggists as a whole fail to do even as well as these ten men have done. But the ten men themselves vary considerably in their profit showings. In the separate tables published by Mr. Nitardy, and not repeated in this paper, it may be observed that one of the ten men attained a profit of only about one-third the general average, whereas another secured only a little in excess of one-half. A third man, on the other hand, nearly doubled the general average. If we take the best profit-maker in the bunch, and give him a rating of 100 percent perfect, the others taper along down to 25, and here you see right away the vast disparity between druggists, and the degree to which many of them fail to make their prescription business yield the profit that it ought to yield.

On several occasions I have suggested that in pricing prescriptions a druggist ought to use some such rational system as that employed by George B. Evans in Philadelphia. Mr. Evans has five or six large establishments, does a business considerably in excess of a million dollars a year, has an enormous prescription patronage, and is one of the most brilliantly successful men in the drug business of the United States. What, briefly, is Mr. Evans' method? *He gets a profit approximating* 100 *percent on the cost of the bare material, and then charges a dollar an hour for actual time consumed in compounding.*

Where would we land if we applied the Evans method to this table of 1000 average prescriptions? Let us see:

100 per cent advance on material	$0.42
$1.00 an hour for labor (one-fifth hour)	.20
Selling price	.62
Cost	.21
Gross profit	.41
Expense	.18
Net profit	.23

By the use of the Evans method, therefore, we have an average net profit of 23 cents instead of 11 cents. This means that the net profit has been more than doubled—and it is the net profit that always tells the story. It is the net profit that you live on, that you educate your children with, and that you use in buying automobiles and theater tickets.

Please observe, too, that in order to double, and a little more than double, your actual profit yield it is only necessary to increase the selling price from 50 to 62 cents—an increase that doesn't seem on the face of it to be very great. You have likewise advanced your *percentage* of net profit, based on the selling price, from 22 to 37.

Now a net profit of 37 percent, based on the sales, is none too much when you consider the amount of space and capital involved in the prescription department, the slow turn-over, the relatively small yield, and the degree of

professional skill required for the work. For these reasons the prescription department should produce a far larger net profit than any other department in the store. It is the one place, indeed, where the drug merchant becomes a member of a skilled profession, and he ought to be paid for his professional services as other men are paid.

But the average man will always answer to this argument: "This is mighty fine reasoning. Your voice sounds melodious in my ears, but after all you are one of those accomplished theorists who can never understand practical conditions. Prescription prices are set by custom, and I can't change them. I am a creature of circumstances. I would like to help myself, but it is quite impossible."

The answer to this indictment is a very simple and convincing one. The large, successful druggists, the men who are supposed to be cut rate dealers doing business on a small net profit, are the very men who get satisfactory prices for their prescription work. The method I have advocated in this paper is the method used by one of the biggest retailers in the United States. He has found it practical and workable. Virtually the same method is used in the store in Chicago where more prescriptions are dispensed daily than in any other one establishment in the city.

Does it work? Of course it works!

When I was a youth in the drug business it was almost the universal custom to charge a flat-price for prescriptions—25 cents for a two-ounce mixture, 30 cents for a three-ounce mixture, and 40 cents for a four-ounce mixture. To a very large extent this practice still prevails, although the average prices have perhaps gone to 30, 40 and 50 cents respectively. In some cities 60 cents is gotten instead of 50 for a four-ounce mixture.

But this flat-price system is fundamentally wrong. To charge 50 cents uniformly for four ounces of medicine, regardless of greatly varying costs, is little less than ridiculous. The wall-paper dealer might as well sell all his stock uniformly at 20 cents a roll whether it costs him 4 cents or 40. The tailor might as well make every suit of clothes for $40.00, instead of charging $30.00 for one and $75.00 for another.

Absurd, isn't it, when you come to think about it seriously?

More than that, other errors equally grave are committed by druggists in the pricing of prescriptions. You will often find a man who bases his price on the size of the dose. For a given mixture he will get a dollar if teaspoonful doses are ordered, and 50 or 75 cents if dessert or tablespoonful doses are indicated! Could anything be more irrational?

Many druggists are practically charging the same prices for prescriptions that they asked fifteen or twenty years ago. In the meantime several factors have contributed greatly to increase costs all along the line. In the first place, the old days when galenicals comprised almost the entire materia medica have largely passed into history. The foreign synthetic chemical, and the domestic pharmaceutical specialty, both of which are considerably more expensive in the very nature of things, have radically changed the situation. Costs of doing business, too, have greatly risen during the last decade, and we have here a subject that has enlisted the keenest study of

economic experts in all the large mercantile establishments throughout the country. And now nearly the entire world has plunged into a great war resulting incidentally in a marked advance in the price of a thousand and one supplies. Nevertheless, despite all these things, we find many a druggist dispensing prescriptions at pretty nearly the same old figures.

The whole question sums itself up in one conclusion from which there is no logical escape. It is this: There is only one sensible method of pricing prescriptions or anything else. *The price should be based absolutely on the cost, plus expenses, plus a reasonable net profit.* Any other method is artificial. Any other method is absurd and ridiculous. This is the simple rule followed by every capable merchant and manufacturer, in every line of trade, and with every class of goods. There is no reason on earth why prescriptions should be any exception.

The great trouble is, in conclusion, that many druggists do not know their prescription costs. They haven't taken the trouble to figure them out. But, after all, it ought to be relatively easy for any man to adopt some such principle as the Evans method. Get 100 percent advance on the cost of material and container, and charge a dollar an hour for labor.

PRESCRIPTION PRICES IN DETROIT.*

WALTER M. CHASE.

During the past month more than a score of Detroit druggists have been called upon with the object of ascertaining what prices are charged for prescriptions, and also to find out how these prices are arrived at. While, from the data obtained, it would seem that the pharmacists of Detroit tend to secure fair prices, they are not, however, in all instances getting quite adequate returns for the material and workmanship involved. Particularly is this so when the increasing costs of merchandise and labor are considered.

The stores visited were not chosen at random, but were so selected that at least one out of every type of prescription department in the city might be investigated. They included down-town establishments, neighborhood stores, and places on the outskirts of the city. Managers of the prescription departments of chain stores, basement pharmacies, pharmacies in apartment houses, so-called "cut rate" stores, department stores, and stores located in exclusive sections and in sections populated by foreigners, were all asked to give their methods.

Perhaps the most striking feature brought out by the investigation was the number of different systems in vogue for arriving at selling prices. Some druggists use the N. A. R. D. schedule or modifications of it; some follow the Evans rule of doubling the cost of materials used and adding one dollar an hour for time consumed in compounding; some have a flat price based on the size of the prescription. Others make a special price on each pre-

*Read before Detroit Branch A. Ph. A. October 14 1915.

scription, getting whatever they think the customer will stand for, while still others guess at a suitable price, depending upon their knowledge of the business to make it show a satisfactory profit.

The system employed by a certain chain of stores is dictated by the company's main office in the East. The schedule is quite a complicated one, but the prices obtained from following it compare most favorably with the best figures secured in other stores throughout the city. The schedule of prices approximates that obtained by users of the Evans rule. The cost of the ingredients is doubled; a charge is added for the label and container; and compounding is charged for at the rate of about $1.50 an hour.

One druggist, who has no set rule, told me that his price depended entirely upon the customer he had to deal with. He took into consideration the ability of the customer to pay, whether the sale was a cash or a credit one, the likelihood of a refill, and for what purpose the medicine was intended. He informed me with a grin that a prescription for solution of argyrol and santal oil capsules had to show up a better margin of profit than one for elixir of iron, quinine and strychnine.

Another druggist said that a greater part of his business came from doctors in the vicinity, and that he and these physicians had worked out a price schedule, applying to most of the prescriptions received, which was satisfactory all around. This schedule was a "double-the-cost" one with minimum prices for mixtures containing inexpensive ingredients.

There seems to be quite a tendency to furnish poor patients with medicine at a sub-normal price. One druggist who does this says he makes up the difference on the chronic medicine-takers.

There seems also to be quite a decided tendency to make transient customers pay more than regulars.

The size of dose influences prices to a considerable extent. The smaller the dose the higher the price is, in proportion.

Except in occasional instances the policy of a neighboring store seems to have but little influence. The druggist whom I found to be getting top-notch prices was located almost directly across the street from one whose figures were comparatively low. And both had high-grade stores, each enjoying considerable patronage.

A druggist who did not stick closely to a schedule said that most of his customers asked for prices at the time the prescription was handed over. He always gave them a price at once and took care that it was high enough. He admitted, however, that during the recent skyrocketing of war prices his snap judgment in several cases had cost him real money.

From the variety of schedules in force—or in some cases, the lack of them—it was to be expected that prices for the same mixture would vary considerably in different stores. Such I found to be the case.

For an ordinary one-ounce prescription containing no expensive ingredients, and requiring no special manipulation to compound, prices ranging from 25 cents to 40 cents were quoted. Two druggists said that when the medicine was given in doses of a few drops each their charge would be 50 cents. Thirty-five cents was about the average charge for a one-ounce mixture.

Two-ounce prescriptions ran from 35 to 50 cents. Here again the size of dose came in, and the 50-cent prices were based on 10 or 15 drop doses. The average price was about 40 cents.

On three-ounce mixtures prices of from 40 to 60 cents were the most common. Fifty cents was the average.

The greatest unanimity of price was found on four-ounce mixtures. Sixty and 65 cents seemed to be almost universal charges. Three druggists, however, claimed to get 75 cents, and two are still sticking to the antedeluvian schedule calling for 50 cents.

A store that does a big patent medicine and toilet article business, but which according to the manager's statement does not care for prescription trade, considers 40 to 45 cents a fair price.

A store manager who gets exceptionally good prices says that his ordinary charge for a four-ounce mixture is usually about 60 or 65 cents. His contention is that customers sometimes kick at a 75-cent price, and in order to even up he gets 50 cents for all two and three-ounce mixtures, and even the same price for one-ounce prescriptions when the dose is small.

A druggist on the outskirts of the city sells four-ounce mixtures for 35 and 40 cents. He declares that these prices are the best he can get. That he is afraid of his shadow is evidenced by the fact that his nearest competitor is charging 60 cents and is getting the cream of the trade at that.

Six-ounce mixtures bring prices ranging from 75 to 90 cents.

For eight-ounce packages customers pay anywhere from 85 cents to $1.25, with the majority getting off at one dollar. One druggist says he asks 95 cents because that sum doesn't strike the customer as being anywhere near so high as a dollar does.

Customers who have 16-ounce prescriptions are likely to be charged anything from $1.25 to $2.00.

Powders in dozen lots were quoted to me at from 25 to 60 cents. Forty and forty-five cents seem to be the average. The 25-cent man was the same one who sells four fluid ounces of a liquid for 35 or 40 cents. "Can't get any more," was his excuse.

Capsule prices run about the same as for powders with the exception of one store where 75 cents was the charge. Fifty cents a dozen seemed to be a popular charge.

The minimum charge for one ounce ointments is about 40 cents. Quite a few druggists get 50 cents, while two of them think 35 cents is enough.

To get an idea of the price a customer would have to pay for the same prescription in different stores I asked each druggist for his price on one fluid-ounce of a saturated solution of potassium iodide.

And what a conglomeration of prices I found! Here they are: 50 cents, 60 cents, 65 cents, 75 cents, 85 cents, 90 cents, $1.00, and to top them all, a price of $1.25! The cost of the iodide at the time of inquiry ran from $4.50 to $5.00 a pound, or about 30 cents an avoirdupois ounce.

One of the 50-cent men said he was satisfied with the profit that price gave him. Another said that a KI customer was usually good for a number of encores and that he was willing to take small profits repeated over a period of

months. A third said he would make a charge of 50 cents when he felt that the customer was having heavy bills for medicines and only a limited income with which to pay them.

The $1.25 man said his customers expected the best of drugs, artistically prepared packages, special messenger service, and all the time they wanted in which to settle. Under such conditions he didn't consider that he was mulcting anyone.

In general the average price was in the neighborhood of 60 or 65 cents. A few got 75 cents or more. But great as were the variations in price, these were simply on a par with the various methods used in preparing the saturated solution itself.

To make it I found that different druggists were using anywhere from 360 to 480 grains of potassium iodide. Some used 6 drachms, some 7 drachms, some 7½ drachms, some one avoirdupois ounce, and some an apothecaries' ounce. In certain cases the iodide was dissolved in a graduate, water enough being added to make a volume of one fluid-ounce. In other instances the iodide was dumped into a so-called one-ounce prescription bottle and enough water poured in to fill the bottle.

A solution of which one minim will represent one grain of salt can be prepared by adding five fluid-drachms of water to an apothecaries' ounce of potassium iodide, but a solution of that strength was used in only a few instances.

Whether or not prescriptions are shopped to any great extent appears to be a mooted question. Some of the druggists say that the practice is an uncommon one, while others assert that their prices are quite often cut by competitors. In general, however, the stores doing the largest business make their prices and stick to them regardless of the other fellow.

Most of the druggists aver that they respect the N. A. R. D. cost mark when it appears on a prescription, although I found one manager who said that in his store the cost mark was looked at and that was about all. If the price was the same as his established charge for the mixture, well and good; if not, it was disregarded. He declared, however, that he did not use the cost mark as an excuse to cut under and disorganize price conditions.

One interesting fact may be stated in conclusion. Mr. Nitardy, in his recent investigation, found that the average price obtained for 10,000 prescriptions was 50 cents. The largest druggist I called on told me that it had for years been the aim of his company to attain an average price of 60 cents. This means an increased net profit of 10 cents over the average figures discovered by Mr. Nitardy.

ADDITIONAL DATA CONCERNING THE PREPARATION OF MAGMA MAGNESIA, MILK OF MAGNESIA.

SAMUEL T. HENSEL, PH. G.

In my previous communication upon this subject which appeared in the August, 1914, issue of the Journal of the A. Ph. A., I gave an amount of water required to wash the precipitate which was based upon the instructions given in the National Formulary to "wash it until free from saline taste."

This investigation was therefore begun to determine more definitely the extent to which it is necessary to carry the washing of the magma in order to secure the practical elimination of the sodium sulphate and excess of sodium hydroxide contained in the supernatant liquor.

For the purpose of this experiment the same system originally employed was established; this consisted of,

First: A well annealed glass precipitating bottle, the exact capacity of which was found to be three gallons, six pints and a half, the ordinary measures employed in the store being used for measurement.

Second: Metathesis was effected in the manner described in my former paper, and the resulting mass introduced into the bottle for subsidance.

Third: A record was kept providing for observations made at intervals of 24 hours, of the supernatant liquor. At the expiration of each period 500 cc. (mils) of the liquor were taken for examination.

Fourth: The solid content of the 500 cc. (mils) thus taken was determined gravimetrically, this method having been selected as the quickest and most practical for the average pharmaceutical laboratory, the volumetrical analysis of the supernatant liquor requiring too much time in the absence of the requisite standardized solutions.

The results obtained, considering the means at my disposal, are remarkably accurate, as I shall presently show.

I subsequently made a third experiment, for the purpose of comparison with the following results, this time using a Beaumé hydrometer, for the determination of the solid content of the solution, as shown in experiment No. 3.

The following observations were made:

SEDIMENTATION RECORD (SUPERNATANT LIQUOR)

Temperature 25 degrees Centigrade.

24 hours	Solid content Na_2SO_4 and NaOH	Grains per 500 cc. (mils)	Per cent.
1st period	" " " "	357	
2nd period	" " " "	171	48
3rd period	" " " "	83	48.5
4th period	Gravimetric limit	——	
5th			
6th			
7th			

SECOND EXPERIMENT.

Period	Grains per 500 cc. (mils)	Per cent.
1st	374	
2nd	186	49.7
3rd	90	48.2
4th Gravimetric limit	——	

The term gravimetric limit is used upon this occasion to indicate the point at which it was difficult with the instruments at my command to make a further gravimetric measurement.

An inspection of the above observations will show that there is a uniform decrement in the solid content of the solution, and that this is a constant, approximating 50 per cent, and a measure for all subsequent decantations.

Reasoning by analogy it will be seen that after the fourth decantation the solid content will be reduced to approximately 20 grains for the whole system, and since the sedimented magma after 48 hours will occupy one-fourth of its volume (that is, the volume of the precipitating bottle), there can be only 5 grains of sodium sulphate and sodium hydroxide remaining in the interstices of the magma. Obviously if the washing had been carried to the end of the seventh washing, the solute would have attained a very high degree of attenuation.

THIRD EXPERIMENT.

In this experiment a Beaumé hydrometer was used, and the following observations made:

Period	Solid Content Per cent by Weight	Specific Gravity	Degrees Beaumé
1st	8.0	1.03187	4.5
2nd	4.0	1.01173	2.3
3rd	2.0	1.00779	1.1
4th	1.0	1.00388	.6
Limit of physical measurement by this instrument	——		

We have in the above measurements results which compare very closely with the results of the first two experiments, and which again indicate a uniform decrement which indicates a constant of 50 per cent.

It will be seen from the inspection of the above tables, that the limit of ponderable content is reached at the fourth decantation, and in view of the harmless nature of sodium sulphate its presence is absolutely negligible, and the application of the $BaCl_2$ T.S. to this preparation is too severe and impracticable, since it would require the washing to be continued to infinite dilution to find a point at which a cloud would cease to be given.

While the writer is not insensible of the fact that the facilities at his command at the time this investigation was conducted were crude, the results obtained are so close to the calculated theory, as to be practically correct.

For the convenience of the readers of this paper, I herewith give the equation representing the reaction which takes place during matathesis, and which was part of my previous paper:

$$\underset{246}{MgSO_4+7H_2O} + 2NaOH + 3H_2O = \underset{58}{Mg(OH)_2} + \underset{322}{Na_2SO_4+10H_2O}$$

The manufacture of this product has been conducted many times by the writer during the past eighteen months and it has been a constant source of interest;

but it was not until he attempted this quantitative work that the significance of much that he has observed has become apparent.

Upon the examination of the first 500 cc. (mils) of the supernatant liquor, he tried to balance the total ponderable solids found, with the molecular weights as indicated by the "law of constancy of composition." He found, of course, that the 357 grains found in the 500 cc. (mils) of solution fell far short of the total molecular weight of the reacting bodies.

He then had recourse to the modern theory of electrolytic dissociation, for which we are indebted to the physical chemist, and here he found the cue which led to the explanation.

From the solubility point of view, as taught by this branch of chemical science, the dissolved magnesium sulphate (salt) and sodium hydroxide (base) in dilute or moderately dilute solution, are dissociated into their constituent ions; the ions only becoming chemically active in such diluted solutions, the molecules of water released by the magnesium sulphate remaining in the solution only as potentialities of subsequent water of crystallization.

As shown by the above equation, 10 molecules of water of crystallization have entered into combination and exist in the solution as potentialities of the crystal form of sodium sulphate, $Na_2SO_4+10H_2O$.

In solution, the water so constituted being of the same specific gravity as the solvent, nothing but the ions Na_2SO_4 and the NaOH contained in the supernatant liquor are ponderable. The total molecular weights of all the reacting bodies could only be determined by the investigation of the whole system employed in effecting metathesis; in other words the 14430 cc. (mils) or the volume of the precipitating bottle employed for sedimentation.

The following calculation will show the ratio of the reacting bodies before and after metathesis according to theory:

$$\frac{Mg(OH)_2}{MgSO_4+10\ H_2O} = \frac{58}{246} \times 44 \text{ equals } 10.4 \text{ ounces } Mg(OH)_2$$

$$\frac{Na_2SO_4+10\ H_2O}{MgSO_4+7\ H_2O} = \frac{322}{246} \times 44 \text{ equals } 57.6 \text{ ounces } Na_2SO_4+10\,H_2O$$

Total	68.0
Less 55.9% water of crystallization	24.59
	43.41

Found as shown by experiment No. 3

$Mg(OH)_2$	10.4
$Na_2SO_4+10H_2O$	32.5
And excess NaOH	42.9 difference of 0.5ounces.

This may be accounted for in part by the loss attending the four decantations.

MAKING THE INITIAL SOLUTIONS.

Before closing this article I would like to say a few words in reference to making the solutions.

Great care must be exercised in making the solution of sodium hydroxide, as the temperature rises rapidly to 210 degrees Fahrenheit at this elevation (Denver), which is equivalent to a reading of 220 degrees at sea level.

All utensils used should be of granite iron ware.

Filtration of the sodium hydroxide solution must not be attempted with ordinary filtering paper for the reason that the causticity of the solution weakens the fiber of the paper, and at the same time acts on it in such a manner as to discolor the solution.

A very convenient way is to adjust two layers of plain gauze of suitable dimension by means of a rubber band to a ½ gallon funnel, then place a layer of absorbent cotton 1 inch in thickness and 5×5 squarely in the center and pour the solution carefully upon it.

The solution of magnesium sulphate may be filtered through absorbent cotton or ordinary filter paper.

COLLECTION OF THE MAGMA.

After the fourth decantation, it is not necessary to drain the whole mass of magma, but only such an amount as will remove the required volume of supernatant liquor necessary to bring the mass to the requisite density.

The draining at this point should be done on filter paper, and the magma thus collected should be removed by means of a silver or silver plated spoon and returned to the precipitating bottle, the whole mass then vigorously shaken. By this method the minimum amount of magma is at any time exposed or brought in contact with other bodies.

Rubber stoppers should be employed for the container, as the magma will in a short time act on cork and discolor both it and the mass.

THE PHARMACIST'S WORK TODAY.*

H. M. WHELPLEY, ST. LOUIS, MO.

We are living in an age of unrest which extends to all branches of human activity. Just at present, mankind is passing through a period of acute excitement which is manifest, the world over. At one time, pharmacy was a quiet, studious occupation with well fixed scope and definite limitations. Pharmacy was caught by the wave of unrest at a date prior to the memory of this generation. The pharmacist of today is so accustomed to chaotic conditions in his own vocation that he is not startled by the perturbations that are found in other lines of trade and professions nor by the heavy head lines in the daily press that but faintly reflect the present great upheaval in the political world of Europe. Only the patient and even-tempered care to remain in pharmacy, with its trials, tribulations and uncertainties. Pharmacy, as we find it, calls for men and women of evenly balanced minds to think right and well developed bodies to resist disease. The future of pharmacy must be worked out by successive generations of the kind of persons who accomplish results in spite of difficulties. We, of today must be followed by those who are peculiarly strong and competent.

It is not my purpose on this occasion to diagnose the diseases that beset pharmacy today. Nor shall I outline a course of treatment nor even indulge in that innocent and inexpensive pastime of prognosing future conditions. What I have

*Address before the Colorado Pharmacal Association, at Boulder, June 23, 1915.

in mind is an exposition of a line of pharmaceutical work which has been going on quietly for two generations but is not generally recognized as "The Pharmacist's Work Today," although it is the most far-reaching in effect of all the varied activities in our calling at present.

THE PHARMACOPOEIA FAR-REACHING.

The Pharmacopoeia of the United States of America, as it is officially known, is more far-reaching in its influence than the drug trade at large comprehends. The Quiz Compend introduces the Pharmacopœia to the average candidate for registration. Such persons do not become well enough acquainted with the U. S. P. to know the book even by sight. College of pharmacy students are much given to studying the Pharmacopoeia in about the same manner as boys study the Bible in the mission Sunday schools of the slums in a large city. The street urchins learn by heart certain Bible verses in order to win prizes. The pharmacy students learn names, tests and formulas as a requirement for graduation. The employes of jobbing houses know the price of the U. S. P. and the fact that it cannot be sold at cut rates. The manufacturing pharmacist and the pharmaceutical chemists gain a more adequate idea of the standard which governs their products and work. Without going into tiresome detail, let us take a general survey of the Pharmacopœia from a safe distance and pleasant point of observation.

I shall not discuss the Pharmacopoeia from the ultra-scientific point of view. Do not place yourselves in a receptive mood for the consideration of the changes in mass and weight which is involved in the formation of complex atoms. You will not be told why the U. S. P. IX should adopt the drop weight method for the determination of the surface tension of a liquid.

PHARMACOPOEIA DEFINED.

A pharmacopoeia is, according to the etymology of the word, devoted to the formulas and directions for preparing medicines. Taking the United States Pharmacopoeia as a type, these authorities today define the character, establish the purity and regulate the strength of medicines for the country in which the Pharmacopoeia is issued. Twenty-three such authorities of national character are now in use. The Swiss Pharmacopoeia is published in German, French and Italian; the United States Pharmacopoeia, in English and Spanish, and [illegible] other pharmacopoeias are published in two languages. Some pharmacopoeias are legal authorities in more than one country and, on account of the itinerant habits of mankind, all of the leading pharmacopoeias are found in different countries. We, in America, use particularly the United States, the German, the British and the French Pharmacopoeias.

The first physician in the forgotten past who reduced to writing a record of his medicines brought into existence the first pharmacopoeia. In the course of time, came the hospital book of prescriptions, the formularies published by medical authorities and, in 1618, the London Pharmacopoeia. Paris also issued a pharmacopoeia in 1639. In 1699, Edinburgh published a pharmacopoeia. Then came in 1818 the first pharmacopoeia of national character. France has the credit for it and it is significant that the work was given to the world at a time when the country was in the throes of political turmoil. The United States also

realized the advantages of a National Pharmacopoeia and published its first one in 1820.

The way for a national pharmacopoeia in this country was blazed by Dr. William Brown, of a military hospital, and it was published at Lititz, Lancaster County, Pa., early in the Revolutionary War (March 12, 1778). The advantages which Dr. Brown claimed for his little volume of thirty-two pages are in keeping with the spirit of the times in Europe today. Dr. Brown says that the eighty-four formulas for internal and sixteen for external remedies are "adapted especially to our present state of need and poverty which we owe to the ferocious cruelty of the enemy and to the cruel war brought unexpectedly upon our Fatherland." "The cruel war brought unexpectedly upon our Fatherland" sounds like a recent expression in Germany, Austria, Russia, France, England, Italy and particularly Belgium.

My first activity in editorial work of a pharmaceutical nature began in 1884, at a time when the pharmaceutical world expected to soon have an International Pharmacopoeia as a result of several years of previous work. During the seventh triennial convention of the International Pharmaceutical Congress, at Chicago, in 1893, the American Pharmaceutical Association tendered the sum of one thousand dollars for use in preparing an International Pharmacopoeia. The money was never used. It has since been determined that the pharmacists of the principal countries of the world can no more agree on general formulas than can the governments of the world on a plan of international peace. In 1902, the pharmacists gave up the idea of securing an International Pharmacopoeia which would give formulas for practically all of the preparations in use by civilized man and went to the other extreme. The International Conference for the Unification of Potent Remedies which met in Brussels, thirteen years ago, came to an agreement on a few general principles to be adopted by the Pharmacopoeias of the different countries, as they are revised. The United States was then at work on the U. S. P. VIII and was the first country to fall in line. Other countries have since changed some of their standards, but to the United States belongs the honor of having fully acceded to the letter of the international agreement. These standards are only of a general character, such as making all of the stronger opium preparations 10%, the liquid arsenic preparations 1% and having a certain fixed strength for some of the most universally used potent remedies. It was this agreement which caused the Revision Committee, ten years ago, to reduce the strength of the tinctures of aconite and of veratrum and to double the percentage of drug in the tincture of strophanthus.

The physicians and pharmacists of the world can agree on a uniform percentage of strength for potent remedies, but an international Pharmacopoeia is an impossibility because they cannot decide on the color for some liquids and the flavor for other preparations nor on the worthless ingredients to be retained in a few old time remedies.

It was in January, 1817, one year before the appearance of the French Codex, which was the first Pharmacopoeia of a national character, that the Medical Society of the County of New York arranged for a convention of delegates from medical societies for the purpose of editing and publishing a national pharmacopoeia. The volume made its appearance, December 15, 1820. This conven-

tion has greatly changed in character but has met every ten years since the first assembly, at Washington, January 1, 1820. The last meeting was in May, 1910, and the next one is called for May, 1920. The Pharmacopoeia has been published from one to five years after these decennial conventions. The U. S. P. VIII, now in use, appeared in June, 1905. We may anticipate the U. S. P. IX in November or December, 1915. It is misleading to refer to the Pharmacopoeia of 1900 or the one of 1910, as no revision since the first one has been published in a decennial year. We should form the habit of speaking of the new Pharmacopoeia as the U. S. P. IX.

EARLY PHARMACOPOEIAL REVISION WORK.

The pharmacopoeial revision work in this country began in 1820 and was entirely in the hands of the medical profession. A few physicians, at odd moments, decided on the text of the first five publications which were authorized by the conventions of the decennial periods 1820 to 1860 inclusive. In 1852, the American Pharmaceutical Association asked for the admission of pharmacists to the pharmacopoeial revision conventions and secured representation in 1870. The U. S. P., published, December 15, 1820, is a small volume of 272 pages. One-half of the book is taken up with a Latin translation of the English text. It was soon found, however, that all Latin reading pharmacists in this country could also read English, so the Latin text was not continued in subsequent revisions. The U. S. P. of 1820 is little more than a mere list of materia medica titles accompanied by a collection of formulas without working directions for manipulations. Physicians do not realize the value of the Pharmacopoeia as a working manual and the revisions authorized in 1830, 1840, 1850 and 1860 made but little progress in that direction. The collection of early Pharmacopoeias in the library of the Denver Branch of the American Pharmaceutical Association will prove instructive as well as interesting to those who care to study the foundation on which the greatest work of American pharmacists is built.

RECENT PHARMACEUTICAL REVISION WORK.

The admission of pharmacists to the convention of 1870 lead to revision along broader lines. This became more apparent with the publication of the U. S. P. VI, authorized by the convention of 1880. The book became more popular and important. The committee elected by the convention of 1890, expanded the Pharmacopoeia in a new direction. Dr. Charles O. Curtman and Professor Frederick B. Power were members of that committee. They found that the description of chemicals and the tests for purity had been copied from foreign authorities. These practical revision workers realized that the chemicals in the American drug trade do not always come from the same source as those found in Europe, nor are they always made by the same processes. The chemicals in the United States have impurities not occurring in those of foreign markets. The Pharmacopoeia gave no tests for such substances but detailed tests for impurities which never occur in the chemicals of the American market. The U. S. P. VII became a working manual for pharmaceutical chemists to an extent not covered by previous revisions. The convention of 1900 was revolutionary in character and incorporated the delegate body as the "United States Pharmacopoeial Convention." The general principles adopted and the instructions given the revision committee

all evidenced a determination to make the Pharmacopoeia more useful in the drug store, the laboratory and the office of the analyst. The U. S. P. VIII which resulted and with which we are now working is acknowledged as the most useful Pharmacopoeia in the world. In England, it has been held up as a model for the revisers of the British Pharmacopoeia. Germany gave the revision committee credit for advanced pharmacopoeial work. The convention of 1910 was the most democratic of any in the series. The gathering in 1820 was made up entirely of physicians. The deliberate body in 1910 represented medical schools, pharmacy schools, state medical associations, state pharmaceutical associations, the American Medical Association, the American Pharmaceutical Association, the American Chemical Society, the U. S. Army, the U. S. Navy, the U. S. Marine Hospital and Public Health Service, the U. S. Department of Agriculture, the U. S. Department of Commerce and Labor, the Association of Official Agricultural Chemists, the Association of State and National Food and Dairy Departments, the National Wholesale Druggists' Association, and the National Dental Association.

INFLUENCE OF THE FOOD AND DRUGS ACT.

Prior to the Food and Drugs Act of June, 1906, the manufacturing pharmacists, the manufacturers of medicinal chemicals and the jobbing druggists regarded the Pharmacopoeia as a joke as far as being a law and guide for them. To always follow the Pharmacopœia never entered even the edge of their minds When requested by the revision committee to give processes and tests for use in revision work, the information was not forthcoming. The U. S. P. VIII became official late in 1905. Early in 1906, it became apparent that the Food and Drugs Act would become a law and make the Pharmacopoeia the legal standard. The chemists in manufacturing and wholesale houses began to study the U. S. P. VIII and find fault with limits of purity and the kinds of tests. The Board of Trustees authorized a conference of the Committee on Revision with representatives of the manufacturing interests. This resulted in the publication of a four-page supplement to the first print of the U. S. P. VIII, changing a number of standards so that they could be met on a commercial basis. Medicinal purity was maintained but chemical purity not always necessitated. This was not a supplement of corrections of errors in the Pharmacopoeia but a list of revision changes which would not have been necessary if the Committee on Revision could have secured before printing the U. S. P. VIII the information which later came so freely on account of the food and drugs legislation. The full co-operation of every interest in any way associated with pharmacy or medicine is now assured for revision work. This condition should be apparent in the U. S. P. IX but will inure to a fuller extent in the preparation of the U. S. P. X, which will be authorized by the convention of May, 1920, only five years hence.

MEDICAL INFLUENCE ON THE PHARMACOPOEIA.

Perhaps it was appropriate for the physicians to be the only obstetricians at the birth of the U. S. P., in 1820. The doctors acted as wet nurse until 1870 The pharmacists then began a courtship and the Pharmacopoeia became wedded to them, in 1890. The chemists became the star boarder in the official family of 1910. The doctors saw the trend of affairs and made an outcry. One medical

teacher wrote a sensational article on "The Recapture of the Pharmacopoeia" and urged the medical profession to take possession of the U. S. P. at the convention of 1910. The Pharmacopoeia slipped away from the physicians because the doctors drifted away from the materia medica and therapeutics of the days of 1820. Medical schools have almost ceased to teach along lines that interest the students in the Pharmacopoeia. Few practitioners came to the convention of 1910. The Pharmacopoeia was not captured. If it had been captured, perhaps the physicians would not have known what to do with it. More medical work in pharmacopoeial revision is desirable and pharmacists should urge physicians to learn more about the Pharmacopoeia and give it greater attention in the medical schools.

WHY PHARMACISTS HAVE NOT DESERTED THE PHARMACOPOEIA.

Pharmacists did not follow physicians in deserting the Pharmacopoeia because of the counter trade in drug stores, which calls for drugs and domestic remedies even though the prescription trade has dwindled in volume and changed in nature until very few prescriptions call for pharmacopoeial preparations. The food and drug legislation of more recent times has increased the importance of the Pharmacopoeia to pharmacists. In some states, the law requires a Pharmacopoeia as a part of the library of each drug store. Pharmacists cannot desert the Pharmacopoeia even if they would. In fact, the importance of the work grows with each decennial revision.

THE SCOPE OF THE PHARMACOPOEIA.

Two extreme views are held regarding the proper scope of the Pharmacopoeia. Some contend that such an authority should include every article used in medicine which is not of a proprietary nature. A few years ago, a practitioner of medicine, high in pharmacopoeial authority, stated that, "If physicians prescribe brick dust, then brick dust should be defined by the Pharmacopoeia." Other physicians believe that only medicines of "proved therapeutic value" should be admitted to the Pharmacopoeia. The average pharmacist who holds views on this subject expects the Pharmacopoeia to cover a scope midway between these two extremes. The National Formulary relieves the situation very much as far as the retail pharmacist is concerned. The proposed Recipe Book of the American Pharmaceutical Association will still further help furnish standards for unofficial medicines of questionable therapeutic value of a discarded but not forgotten class. It is probable that the convention of 1920 will be called on to adopt very definite action on scope of the U. S. P. X.

LEGAL STATUS OF THE U. S. P.

The Pharmacopoeia has, by common usage, always answered the purpose of a legal standard in the various courts of this country. It was not until the Food and Drugs Act of June, 1906, that the U. S. P. was read into a national law. The ruling of the Department of Internal Revenue also holds the Pharmacopoeia to be the standard under the Harrison Anti-Narcotic Law. Various state pharmacy laws recognize the authority of the U. S. P. In practical effect, the Pharmacopoeia in this country is as much a legal standard as are any of the government-made pharmacopoeias of the old world.

WORK OF A PHARMACOPOEIAL CONVENTION.

When the three or four hundred delegates convene at a decennial assemblage, the first work is the adoption of a set of General Principles to govern the work of a committee on revision for a period of ten years. Then comes the election of a new set of officers, the Committee on Revision and the Board of Trustees. A record of this procedure is not found in the commentaries on the U. S. P. but is given in a portion of the Pharmacopoeia which is seldom read even by teachers in schools of pharmacy. I refer to pages I to LXXV inclusive. I advise you to read this section of your Pharmacopoeia at the first opportunity. It will give you a better idea of the American Pharmacist's Work of Today.

HOW THE COMMITTEE ON REVISION WORKS.

The work of the Committee on Revision goes on so quietly that no one realizes the nature or full extent of the task. The General Committee consists of fifty-one members who work without salary or assurance of adequate remuneration. This large body finally passes on all questions brought before it and must approve the Pharmacopoeia as a whole before the pages are electrotyped for printing. Each of the fifty-one members has a large ring cover in which to file the recent correspondence. The letters are mimeographed on legal cap size sheets. The pages are numbered consecutively and the letters dated and numbered. Canvas binders are furnished, each holding five hundred sheets of the accumulated correspondence. Thus each member has a complete set of volumes covering all of the work of the General Committee. The last circular is Number 302, dated June 9, 1915, and closes with page 1810. This means that 92310 sheets like this exhibit were mimeographed and mailed to the fifty-one members of the General Committee on Revision. The General Committee is divided into fifteen sub-committees on as many different subjects. Each one of the smaller committees has a chairman who conducts correspondence with the associates on his committee. Each member of a sub-committee has a full set of all of the correspondence of the committee. As some persons serve on two or more committees, this correspondence becomes very voluminous. The Executive Committee of fifteen receive the reports of the sub-committees and vote on them before subjects go to the General Committee for approval. The last Executive Committee letter is Number 628 and is on page 3318. These are mimeographed on letter size sheets. The Executive Committee has to date required a total of 51,770 sheets. This, together with the General Committee sheets, makes a total of 145,080 sheets to date. As sheets of both letters and circulars in addition to the above are sent to five trustees we must add 27,640 sheets, making a grand total of 172,720 sheets exclusive of the over-run for reserve sets. This statement of mechanical labor will give some idea of the mental work which has thus far been recorded. It is merely the summing up of committee work, which in turn is based on the work of individual pharmacists, the world over. The Pharmacopoeial Work of American Pharmacists is, indeed, the great work of pharmacists of this decade.

DIGEST OF COMMENTS ON THE U. S. P.

In 1905, the government started in the Hygienic Laboratory a series of bulletins, covering all of the current comments made on the U. S. P. Ten volumes

have thus far been published. Each one contains about five hundred pages. If you desire to know what has been said about the Pharmacopoeia or any official substance by members of the Colorado Pharmacal Association, you will find it in this set of ten government publications. Copies may be purchased at a nominal price from the government printer, at Washington. No one should write a paper on an official substance without seeing what others have said on the same subject before him. This series of bulletins will give the author reference to all that has been published during ten years.

BOARD OF TRUSTEES OF THE U. S. P. C.

All financial transactions and business of the U. S. P. C. is transacted by a Board of Trustees of five elected members, together with the president of the Convention and the chairman of the Committee on Revision, as ex-officio members. Each member of the Board preserves the correspondence of the Board in a manner similar to that followed in the revision work. Every item of expense must be authorized by the entire Board. Bills are paid only by voucher checks which show the nature of the expense. The chairman and the secretary of the Board and the treasurer of the Convention must sign all voucher checks. The Board holds annual meetings but most of the business is transacted by mail and all are mimeographed so that the record in the hands of each Trustee is complete.

THE SALE OF THE PHARMACOPOEIAS.

The publication and the sale of the Pharmacopoeia is entirely in the hands of the Board of Trustees. The book is printed by one firm and another firm has the sales agency. The sales of the U. S. P. VIII began in July, 1905, and now amount to more than sixty thousand copies, for which the Board has received about one hundred and fifteen thousand dollars. The sale will continue even after the U. S. P. IX is on the market.

SPANISH TRANSLATION OF U. S. P.

Over twenty-five hundred copies of a Spanish translation of the U. S. P. VIII have been sold. The same firm that prints the English edition also prints the Spanish translation, but the sales agent is not the one handling the English edition. The income for the Spanish edition to date is over six thousand dollars. The Board of Trustees is now considering the advisability of having the U. S. P. IX translated into Spanish.

PAYMENT FOR USE OF U. S. P. TEXT.

Each revision of the Pharmacopoeia is copyrighted by the Board of Trustees. No author or publisher can legally use portions of the text of the Pharmacopoeia without having permission from the Board. A statement that this permission has been granted must be printed on the reverse of the title page. The form of notice is furnished by the Board and reads as follows:

"*Authority to use for comment* the Pharmacopœia of the United States of America, Eighth Decennial Revision, in this volume, has been granted by the Board of Trustees of the United States Pharmacopœial Convention, which Board of Trustees is in no way responsible for the accuracy of any translations of the official weights and measures, or for any statements as to strength of official preparations."

Publishers in foreign countries as well as America recognize the copyright property and apply to the Board of Trustees for permission to use U. S. P. text in books on pharmacy or medicine. The range of payments made by those using the U. S. P. VIII text is from five to five hundred dollars. The total amount paid to date on account of the U. S. P. VIII is over three thousand dollars. It is probable that the money paid for use of the U. S. P. IX text will be a much greater sum.

PHARMACOPOEIAL INCOME.

The U. S. P. C. has but three sources of income. They are the sales of the Pharmacopoeia in English, the sales of the Spanish translation and the payments made for the use of text. This income since the publication of the U. S. P. VIII in 1905 amounts to about one hundred and twenty-five thousand dollars.

PHARMACOPOEIAL EXPENSES.

The U. S. P. C. has three sub-divisions of expense. They are, (1) Revision Work, (2) Payment for Publication and Sales and (3) The Cost of Administering the Business of the Corporation. The records are kept in a manner that shows expenses in detail so that the Convention of 1920 will know the total cost of the Spanish translation, the Committee on Revision expenses for supplies, the amount spent by the Board of Trustees for meetings and all other such details that may be of interest.

HONORARIA FOR PHARMACOPOEIAL WORK.

The by-laws of the U. S. P. C. provide that the members of the Board of Trustees must serve without compensation. The members of the Committee on Revision are not salaried, but the Trustees may vote them honoraria. This will be regulated by the cash balance rather than the value of the services rendered. The Committee on Revision of the U. S. P. VIII received a blanket payment of two hundred dollars for each member. Additional amounts were then paid to some of the committee who had carried the main burden of the work.

THE CHAIRMAN OF THE COMMITTEE ON REVISION.

The chairman of the Committee on Revision is the one officer who has constant work of responsibility, volume and detail. He is the only one who receives a fixed salary.

PROOF READING OF THE PHARMACOPOEIA.

Proofreading is tiresome routine and a thankless procedure at best. The proofreading of the Pharmacopoeia where a single word or figure may cause error resulting in death is a grave responsibility. The copy is prepared with much care and the proof read by expert professionals in the publishing house. Galley proofs are furnished the fifty-one members of the General Committee on Revision. The page proofs are distributed in a similar manner. Even the proofs of the plates for the final printing are read. The first order for printing calls for ten thousand or more copies. Of this number, one or two thousand are run off, bound and placed on the market to be proof-read by the eager and critical eyes of the pharmacists at large. If errors should be reported, the plates would

be corrected before more copies are printed. I am pleased to say that serious mistakes have never been found in the printed volume.

When the metric system was introduced, the copy or the printer used the word "decimeters" in place of "centimeters" in the statement of the average length of a stick of licorice. This made the stick a giant, ten times as long as natural. A member of the Committee on Revision caught this error in the galley proof. Instead of correcting it, he merely noted with blue pencil on the margin of the paper, "Gosh! What a stick of licorice!"

U. S. P. PUBLICITY.

For the first time in pharmacopoeial work in this country, publicity has been given to the proposed changes in text. The Journal of the A. Ph. A. has published six instalments of Abstracts of Proposed Changes together with New Standards and Descriptions. The pharmaceutical press in general has republished much of this matter. This publicity has led to comments from pharmacists at large and will, no doubt, avoid some of the criticisms of the new work which might otherwise be expected when the U. S. P. IX is placed on the market.

THE NEW PHARMACOPOEIA.

The U. S. P. IX will not be ready for the opening of the schools of pharmacy, this fall, but should be on sale by the first of next year. The Board of Trustees will fix a date on which the new standard will become official. This date will be two or more months after the Pharmacopoeia is obtainable.

The Food and Drugs Act of June, 1906, makes the U. S. P. VIII the legal standard. Perhaps it will require a special act of congress to have the U. S. P. IX become the authority. This is a complication which has never before been possible. The forthcoming Pharmacopoeia will probably be some larger than the present one. The cloth binding will be replaced with buckram, which is more durable. Straps will re-enforce the back so that the book will stand more hard usage. It should be remembered, however, that it is impossible to make an acid and alkali proof book. Nor should a pharmacist expect a single copy of the Pharmacopoeia to endure drug store usage and misuse for ten years. In this connection, it is interesting to note that much more than half of the present Pharmacopoeias sold were cloth bound.

The U. S. P. IX will reflect the present high cost of living and sell for fifty cents per copy more than the U. S. P. VIII.

HOW THE PHARMACOPOEIA SHOULD BE REVISED.

This is a subject unto itself, too large for consideration here. The Pharmacopoeia is the greatest Work of American Pharmacists Today, because it reflects the labor of pharmacists for half a century or more. This feature of the revision plan should not be lost in the future. The committee work, however, would be more effective if in the hands of salaried persons. Perish the thought of a government revision of the Pharmacopoeia. Our present methods are not perfect, but are superior to those followed in foreign countries.

Proceedings of the Council

Fourth, Fifth and Sixth Sessions, 1914-15. First and Second Sessions, 1915-16

FOURTH SESSION, 1914-15.

The fourth session of the Council of the American Pharmaceutical Association for 1914-15 was held at the Hotel Bellevue, San Francisco, on Wednesday evening, August 11, 1915, at 7:30 p. m., Chairman Eberle presiding.

Present: Messrs. Mayo, Claus, Eberle, Day, Godding, Gietner, Osseward, Alpers, Snow, Koch, Freericks, Thiesing, England, Charles E. Caspari and Whelpley.

The minutes of the previous session were read and approved.

The following applications were received and the applicants elected:

No. 302. Thomas S. Newby, Ventura, Cal., rec. by C. M. McKellips and E. L. Newcomb.

No. 303. William Joseph Nolan, 8 Allston St., Boston, Mass., rec. by Theodore J. Bradley and C. H. Packard.

No. 304. Henry Lees Smith, 604 Mission St., San Francisco, Cal., rec. by F. W. Nitardy and Albert Schneider.

The question of insuring the property of the Association now stored with the Lloyd Library of Cincinnati, was discussed, having been referred to the Council by the general session with power to act.

On motion of W. C. Alpers, seconded by Dr. H. M. Whelpley, the matter was referred to a special committee of three to report to the Council. The committee named was: F. H. Freericks, Chairman, E. H. Thiesing and T. D. Wetterstroem.

The subject of the work of the Year Book and National Formulary was brought up by Dr. H. M. Whelpley and discussed at length.

On motion of C. A. Mayo, seconded by J. W. England, a committee of five was directed to be appointed to consider the question and to report at the session of the Council to be held on Thursday evening, August 12, 1915.

The committee named was: J. W. England, Chairman; C. A. Mayo, Dr. H. M. Whelpley, C. M. Snow and J. A. Koch.

The Report of the Committee on Recipe Book, or rather a recommendation of the same, that the Committee on Recipe Book be composed of fourteen members (instead of seven members as at present), with terms of office of five years each, and that the terms of three members shall expire each year, was presented, having been referred to the Council by the Section on Practical Pharmacy and Dispensing.

On motion of C. M. Snow, seconded by C. Osseward, it was directed that such a committee be appointed to take the place of the present Committee on Recipe Book, but that it should consist of fifteen members, including the Chairman, and that it be so selected that three shall serve for one year, three for two years, three for three years, three for four years, and three (including the Chairman) for five years, and thereafter, as terms expire, each member shall serve for a five-year term.

On motion of W. B. Day, seconded by F. H. Freericks, the appropriation in the Budget for Miscellaneous Expenses for 1915 was increased $100.

On motion of J. A. Koch seconded by Charles E. Caspari, the appropriation on the Budget for Salaries for 1915 was increased $1125.

Adjourned to meet Thursday, August 12, 1915, at 7:30 p. m.

J. W. ENGLAND, Secretary.

FIFTH SESSION, 1914-15.

The fifth session of the Council of the American Pharmaceutical Association for 1914-15 was held at the Hotel Bellevue, on Thursday evening, August 12, 1915, at 7:30 p. m., Chairman Eberle presiding.

Present: Messrs. Claus, Day, Eberle, Engelhardt, England, Gietner, Godding, Snow, Mayo, Osseward and Whelpley.

The Report of the Special Committee on Year Book and National Formulary was presented, as follows:

SAN FRANCISCO, CAL., August 12, 1915.

To the Members of the Council:

GENTLEMEN—Your Special Committee on Year Book and National Formulary, appointed at your last session, would report as follows:

Professor C. Lewis Diehl's long years of valuable service as Reporter on the Progress of Pharmacy demands recognition, and in accordance with the precedent hitherto followed at the completion of the previous editions of the National Formulary (when as Chairman of the Committee on National Formulary he was voted an honorarium for his services), and the further fact that the work of the forthcoming edition is practically completed, we recommend that he be now voted an honorarium for his services for this edition.

Professor Diehl writes that he is no longer young, and, like younger men, able to apply himself to his tasks without frequent intermissions for rest, and it is felt, as expressed by the members of the Council last evening, that in justice to the interests of the American Pharmaceutical Association, as well as to Professor Diehl, he should not be expected to continue his arduous and responsible labor as Reporter on the Progress of Pharmacy and Chairman of the Committee on National Formulary, but that successors should be chosen to take over his work; the salary of the Reporter on the Progress of Pharmacy to be reduced to $600 a year for the present.

We recommend, also, that Professor C. Lewis Diehl be retained as titular Chairman of the Committee on National Formulary, but that there be created, by resolution, the position of Vice Chairman of the Committee on National Formulary, and that the Vice Chairman be given full authority to act as the Chairman, or as an Acting Chairman, until further change, and that the Vice Chairman or Acting Chairman, be chosen from the membership of the Committee on National Formulary by the Council.

J. W. ENGLAND, Chairman,
H. M. WHELPLEY,
C. M. SNOW,
J. A. KOCH,
C. A. MAYO.

The report was received and the recommendations adopted.

The following Committee on Nominations of the Council was named: Messrs. England, Day and Claus.

A recommendation was presented from the Section on Education and Legislation that the annual appropriation to this Section for 1916 be increased $100. It was referred to the Committee on Finance.

A recommendation was presented from the Historical Section asking that steps be taken to secure autobiographical data and photographs of newly elected members.

C. A. Mayo moved, seconded by J. W. England, that

WHEREAS, It is desirable to obtain as complete data as possible concerning the members of the American Pharmaceutical Association; therefore, be it

Resolved, That every member of the Association be requested by the Treasurer to furnish to the Historian of the Association a recent photograph and a brief autobiography.

Carried.

Adjourned until Friday, August 13, 1915, at 9 a. m.

J. W. ENGLAND, Secretary.

SIXTH SESSION, 1914-15.

The sixth session of the Council of the American Pharmaceutical Association for 1914-15 was held at the Hotel Bellevue, San Francisco, on Friday morning, August 13, 1915, at 9 a. m., Chairman Eberle presiding.

Present: Messrs. Eberle, Godding, Whelpley, Day, Koch, Claus, Mayo, Dawson, Snow and England.

The minutes of the previous meeting were read and approved.

J. A. Koch, Chairman of the Committee on Finance, proposed the adoption of the following "Rule of Finance," which was adopted:

Rule 14. *Disposal of Receipts from National Formulary*: The Treasurer shall keep a separate and accurate account of all receipts and disbursements for the National Formulary. Any balance of receipts in excess of disbursements remaining to the credit of this account at the end of any fiscal year shall be credited to the Endowment Fund and become a part thereof.

On motion of C. A. Mayo, seconded by J. A. Koch, the rule was adopted.

On motion of W. C. Alpers, seconded by J. W. England, the amendment of Chapter VIII, Article V, proposed by the Committee on Constitution and By-Laws at the Council meeting of August 9, 1915, was approved.

Adjourned *sine die*.

J. W. ENGLAND, Secretary.

FIRST SESSION, 1915-16.

The first session of the Council for 1915-16, or reorganization meeting, was held at the Hotel Bellevue, San Francisco, on Friday morning, August 13, 1915, at 9:30 a. m., Dr. H. M. Whelpley acting as Chairman pro tem.

Present: Messrs. Eberle, Arny, Day, Whelpley, Alpers, Koch, Freericks, Scoville, Godding, Weinstein, Claus, Snow.

The following officials were duly elected. Chairman, Eugene G. Eberle; Vice Chairman, John G. Godding; Secretary, Joseph W. England; General Secretary, William B. Day; Treasurer, Henry M. Whelpley; Editor of the Journal, Eugene G. Eberle.

C. A. Mayo moved, seconded by H. M. Whelpley, that the Council elect the Reporter on the Progress of Pharmacy for 1915-16 at a salary of $600 a year. Several nominations were made, and Julius A. Koch was elected.

The nominations for the Committees of the Council for 1915-16, as recommended by the Committee on Nominations, were accepted and the nominees elected. The committees were:

Committee on Finance—J. A. Koch, Chairman; Otto F. Claus, E. H. LaPierre.

Committee on Publication—J. W. England, Chairman; George M. Beringer, E. Fullerton Cook, F. J. Wulling, Harry B. Mason. *Ex-Officio Members*—The Editor, Reporter on the Progress of Pharmacy, General Secretary and Treasurer.

Committee on Invested and Trust Funds—Wm. B. Day, Chairman; Charles Holzhauer, E. G. Eberle; H. M. Whelpley, ex-officio.

Committee on Centennial Fund—John G. Godding, Chairman; Wm. B. Day, J. A. Koch.

Auditing Committee—Otto F. Claus, F. W. Sultan, E. O. Pauley.

Committee on Transportation—Thos. F. Main, Chairman; Wm. B. Day, Lewis C. Hopp, H. M. Whelpley, Charles G Merrell, Charles Caspari, Jr., Fred I. Lackenbach, E. Floyd Allen, F. C. Godbold, W. S. Elkins, Jr., C. Herbert Packard and F. W. Nitardy. The General Secretary and Local Secretary, ex-officio.

Committee on Unofficial Standards—Elmer E. Wyckoff, J. A. Koch, L. D. Havenhill and E. L. Newcomb; George M. Beringer, Chairman.

W. L. Scoville suggested the desirability of having a standard local badge at the annual meetings.

W. B. Day moved, seconded by C. A. Mayo, that the General Secretary instruct the Local Secretaries that all local badges adopted must have the approval of the General Secretary. Carried.

On motion of H. M. Whelpley, seconded by C. A. Mayo, Fabius C. Godbold, of New Orleans, was elected Honorary President.

Adjourned to meet at the call of the chair.

J. W. ENGLAND, Secretary.

SECOND SESSION, 1915-16

The second session of the Council for 1915-16 was held at the Hotel Bellevue, San Francisco, on Friday afternoon, August 13, 1915, at 1 p. m., Chairman Eberle presiding.

Present: Messrs. England, Whelpley, Mayo, Freericks, Day, Koch, Scoville, Godding, Claus and LaPierre.

The reading of the minutes of the previous meeting was dispensed with.

H. M. Whelpley moved, seconded by E. H. LaPierre that an honorarium of $1000 be voted to Professor C. Lewis Diehl for his work on the National Formulary, Fourth Edition, to be paid in two installments, one installment of $500 now, and the other during the year 1916. Carried.

C. A. Mayo moved, seconded by H. M. Whelpley, that the term of office of the Reporter on the Progress of Pharmacy cease on September 1, 1915, and that the term of office of the newly-elected Reporter on the Progress of Pharmacy take effect as of the same date. Carried.

On motion of H. V. Arny, seconded by J. W. England, Wilbur L. Scoville was elected Vice Chairman of the Committee on National Formulary, with authority to act as chairman.

On motion of J. W. England, seconded by H. M. Whelpley, all reference in the minutes to the filling of the position of Reporter on the Progress of Pharmacy was directed to be expunged from the minutes, except the final action.

F. H. Freericks moved, seconded by H. V. Arny, that C. Mahlon Kline, of Philadelphia, be elected Local Secretary for 1916. Carried.

Adjourned.

J. W. ENGLAND, Secretary.

OFFICERS-ELECT OF AMERICAN PHARMACEUTICAL ASSOCIATION, 1916-1917

The Board of Canvassers met November 4th and have reported the following as the result of the election of officers for the year 1916-17:

President—Frederick J. Wulling, Minneapolis, Minn.

First Vice-President—Leonard A. Seltzer, Detroit, Mich.

Second Vice-President—Lucius E. Sayre, Lawrence, Kansas.

Third Vice-President—Philip Asher, New Orleans, La.

Members of the Council—James H. Beal, Urbana, Ill.; William C. Alpers, Cleveland, Ohio; Harry B. Mason, Detroit, Mich.

The Board of Canvassers is composed of the following members: A. H. Clark, Chairman; Wm. Bodemann, S. K. Sass, C. W. Patterson, B. L. Eicher.

The Board of Canvassers has made a recommendation that on future ballots a square be placed before each name for the guidance of the voter and to facilitate the counting of the ballots.

REPORT OF THE COMMITTEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, George M. Beringer, 501 Federal St., Camden, N. J.

PAREIRA

Pareira. Pareira brava.

The dried root of *Chondrodendron tomentosum* Ruiz et Pavon (*Fam. Menispermaceae*), without admixture of more than 5 percent of stems and other foreign matter.

Nearly cylindrical, more or less tortuous, of variable length and 1 to 6 cm. in diameter; externally brownish-black or blackish-brown with transverse ridges on knot-like projections, occasionally fissured and longitudinally wrinkled or even furrowed; hard, heavy and tough; when freshly cut having a waxy lustre; the transverse surfaces exhibiting several, successive eccentric and distinctly radiate, concentric zones of projecting, secondary, fibrovascular bundles, each 2 to 4 mm. in width and separated by distinct, concentric zones of parenchyma and stone cells; odor slight; taste very bitter.

Stems deeply furrowed, grayish in color, usually covered with foliaceous patches of lichens bearing their blackish apothecia; internally grayish-yellow, with a prominent development of wood and without a waxy lustre.

Powder—Dark brown; containing numerous starch grains and a few woody fragments; starch grains mostly single, occasionally unequally 2- to 4-compound, the individual grains ellipsoidal, or oblong, 0.005 to 0.020 mm. in diameter, and occasionally with central clefts or irregular markings; fragments with large, wide tracheæ the walls with numerous slit-like pores and associated with long, thick-walled, strongly lignified, porous wood-fibres; stone cells in small groups, with thick porous walls and in form resembling those of fruits and seeds; fragments of starch-bearing parenchyma; cells of the root, thick-walled, strongly lignified and with large longitudinal, elliptical pores; occasional fragments of blackish-brown cork.

The yield of ash should not exceed 5 percent.

PHYTOLACCA

Phytolacca. Poke Root.

The dried root of *Phytolacca decandra* Linné (Fam. *Phytolaccaceae*), collected in autumn.

Cylindrical, somewhat tapering, sparingly branched, 3 to 7 cm. thick, mostly in transverse of longitudinal slices; externally yellowish-brown, finely longitudinally or spirally wrinkled and thickly annulate with lighter colored, low ridges; fracture fibrous, characterized by alternating layers of fibrovascular tissue and parenchyma, the layers of the latter being much retracted; odor slight; taste sweetish, afterwards highly acrid.

The yield of ash does not exceed 12 per cent.

Average dose.—Emetic, 1 Gm. (15 grains). Alterative, 0.125 Gm.=125 milligrammes (2 grains).

PIMENTA

Pimenta. Allspice.

The dried, nearly ripe fruits of *Pimenta officinalis* Lindley (Fam. *Myrtaceae*), without admixture of more than 5 percent of stems and foreign matter.

Subglobular, 4 to 7 mm. in diameter, summits with 4 calyx-teeth forming a minute ring; externally dark brown, somewhat rough and glandular-punctate; pericarp brittle, about 1 mm. in thickness; 2-locular and 2-seeded; dissepiments thin; seeds planoconvex, slightly reniform, externally reddish-brown, smooth, somewhat wrinkled and shiny; odor and taste, particularly of the pericarp, aromatic and distinct.

Powder—Reddish-brown or dark brown; consisting chiefly of irregular fragments and numerous starch grains, the latter being either single or compound, the individual grains spherical, plano-convex or polygonal, and frequently with a central circular marking or cleft, from 0.003 to 0.015 mm. in diameter; stone cells numerous of tabular, pyriform or variable shape and with thick porous and strongly lignified walls, the lumina frequently filled with a yellowish- or reddish-brown amorphous substance; fragments with oil secretion reservoirs containing globules of a yellowish-brown oil; and parenchyma cells with reddish-brown tannin masses. Stem fragments very few, and characterized by more or less curved, thick-walled, non-glandular hairs, rosette aggregates of calcium oxalate, from 0.006 to 0.017 mm. in diameter, tracheid-like tissues of the wood and long, narrow bast-fibers.

The yield of crude fiber should not exceed 25 percent.

The yield of ash should not exceed 6 percent. The amount of the ash insoluble in diluted hydrochloric acid should not exceed 0.5 percent.

PLUMBI IODIDUM

Lead Iodide.

It should contain not less than 98 percent of pure Lead Iodide (PbI_2=460.94). It should be kept in well-stoppered bottles, protected from light.

A heavy, bright yellow powder, without odor or taste; permanent in the air.

Soluble in about 1300 parts of water at 25° C., and in about 200 parts of boiling water, separating from the latter solution on cooling in brilliant, golden-yellow, crystalline laminæ; very slightly soluble in alcohol, but soluble, without color, in solutions of the fixed alkalies, in concentrated solutions of the alkali acetates, of potassium iodide, and of sodium thiosulphate, and in a hot solution of ammonium chloride.

When moderately heated, the salt fuses to a thick, reddish-brown liquid, which congeals, on cooling, to a yellow, crystalline mass. At a higher temperature it is decomposed, with the evolution of violet vapors of iodine, leaving a lemon-yellow residue of lead oxyiodide.

If 1 Gm. of the salt be triturated with 2 Gm. of ammonium chloride and 2 mils of water, a nearly white mixture will result. If this be transferred to a test-tube, and heated in a water-bath for a few minutes, a clear and almost colorless solution should be formed (absence of *chromate* and *other insoluble foreign salts*). On cooling this solution, a solid mass of nearly colorless, fine, silky crystals will be produced, and on adding water or diluted sulphuric acid to this mass, lead iodide will separate.

Add 0.1 Gm. of the salt to 5 mils of water, and heat the mixture until it boils; cool the liquid and filter it into a test-tube of about 40 mils capacity, then add 5 mils of potassium hydroxide T. S. and about 0.2 Gm. of aluminum wire; insert in the upper portion of the test-tube a pledget of purified cotton, and over the mouth, place a piece of moistened, red litmus paper; then if the tube be heated on a water-bath for fifteen minutes, no blue coloration of the paper should be discernible (*limit of nitrate*).

Boil 1.5 Gms. of Lead Iodide with 15 mils of water, cool and filter. 5 mils of this filtrate, from which the lead has been removed by hydrogen sulphide, when filtered, evaporated and gently ignited should leave not more than 0.002 Gm. of residue (*soluble foreign salts*).

To another portion of 5 mils of the filtrate, add a slight excess of silver nitrate T. S., filter and add to the filtrate a slight excess of diluted hydrochloric acid and refilter. On neutralizing this filtrate with ammonia water and then adding a drop of ferric chloride T. S., no red color should be produced (*acetate*).

Assay—Weigh accurately about 0.8 Gm. of Lead Iodide and dissolve it in a measured volume of potassium hydroxide T. S., (the chloride content of which has been determined), add 50 mils of tenth-normal silver nitrate V. S., acidulate with diluted nitric acid. Then add 2 mils of ferric-ammonium sulphate T. S. and titrate with tenth-normal potassium sulphocyanate V. S. It shows not less than 98 percent PbI_2 after making allowance for the chloride content of the potassium hydroxide used in effecting solution.

Each mil of tenth-normal silver nitrate V. S., consumed corresponds to 0.023047 Gm. of PbI_2.

Each Gm. of Lead Iodide is equivalent to 42.52 mils of tenth-normal silver nitrate V. S.

POTASSII CHLORIDUM

Potassium Chloride.

It should contain, when dried to constant weight at 100° C., not less than 99 percent of Potassium Chloride (KCl=74.56). It should be kept in well-stoppered bottles.

Colorless, elongated prismatic or cubical crystals, or a white, granular powder, permanent in dry air; odorless; taste saline.

Soluble in 2.8 parts of water at 25° C.; slightly more soluble in boiling water; insoluble in alcohol.

When heated the dry salt decrepitates. To a non-luminous flame it imparts a violet color unmasked by yellow.

An aqueous solution of the salt yields with silver nitrate T. S. a white curdy percipitate insoluble in nitric acid but soluble in an excess of ammonia water.

An aqueous solution (1 in 10) must be clear and neutral to litmus paper.

5 mils of an aqueous solution (1 in 10) after boiling, must not be rendered cloudy within 15 minutes after the addition of an equal volume of barium hydroxide T. S.

10 mils of an aqueous solution (1 in 25) must not respond to the U. S. P. Modified Gutzeit Test for *Arsenic*.

10 mils of an aqueous solution (1 in 50) must not respond to the U. S. P. Time Limit Test for *Heavy Metals*.

Dissolve 2 Gm. of the salt in 6 mils of water, add 1 mil of chloroform followed by the addition, drop by drop, of 5 mils of half strength chlorine water with constant agitation, the chloroform must not acquire a violet or an orange color (*iodides* or *bromides*).

Assay—Weigh accurately about 0.25 Gm. of Potassium Chloride, previously dried to contant weight, dissolve it in 25 mils of distilled water in a flask graduated at 200 mils. Add 50 mils of tenth-normal silver nitrate V. S. to the solution, and, after adding 5 mils of nitric acid add sufficient distilled water to make the volume up to 200 mils and thoroughly mix the liquid. Filter the mixture through a dry filter and reject the first 20 mils of filtrate, then collect 100 mils of the filtrate, add to this 2 mils of ferric ammonium sulphate T. S. and titrate with tenth-normal potassium sulphocyanate V. S. It indicates not less than 99 percent of Potassium Chloride

Each mil of tenth-normal silver nitrate V. S. corresponds to 0.007456 Gm. Potassium Chloride. Each gramme of Potassium Chloride, dried to constant weight, corresponds to at least 132.8 mils of tenth-normal silver nitrate V. S.

POTASSII GLYCEROPHOSPHAS

Potassium Glycerophosphate.

It contains not less than 65 percent of anhydrous potassium glycerophosphate ($K_2C_3H_5(OH)_2PO_4$=248.31). Preserve it in well-stoppered bottles.

Potassium Glycerophosphate is a colorless or yellowish, syrupy liquid or semi-solid mass, odorless and having a saline taste.

It is very soluble in water, almost insoluble in alcohol.

Its aqueous solution is alkaline to litmus and slightly alkaline to phenolphthalein.

When strongly heated it is decomposed, evolving inflammable vapors and at a red heat it is converted into potassium pyrophosphate.

An aqueous solution of the salt (1 in 5) mixed with a few mils of acetic acid yields with sodium bitartrate T. S. a white crystalline precipitate, soluble in alkali hydroxides or carbonates.

To 10 mils of an aqueous solution of the Salt (1 in 10) add 10 mils of ammonium molybdate T. S. and warm the mixture in a water bath to 40° C., no precipitate should form within 15 minutes (*Phosphate*). On prolonged heating, or more quickly at a higher temperature, a yellow precipitate will be formed.

The red color produced by the addition of 3 drops of phenolphthalein T. S. to a solution of 1 Gm. of the salt in 10 mils of distilled water is discharged by the additon of 1.5 mils of tenth-normal sulphuric acid (*limit free alkali*).

10 mils of the aqueous solution (1 in 50) does not respond to the U. S. P. Test for *heavy metals*.

Triturate 1 Gm. of Potassium Glycerophosphate for 5 minutes with 20 mils of dehydrated alcohol and filter the mixture, and evaporate the filtrate to dryness at a temperature not exceeding 70° C., the weight of the residue does not amount to more than 1 percent. (*Glycerin and other soluble substances*).

Assay—Weigh accurately about 3 Gm. of potassium Glycerophosphate, dissolve it in 30 mils of distilled water and titrate the solution with half-normal hydrochloric acid V. S.,

using methyl orange as indicator. It indicates not less than 65 percent of anhydrous potassium glycerophosphate. Each mil of half-normal hydrochloric acid V. S. consumed corresponds to 0.124155 Gm. of ($K_2C_3H_5(OH)_2PO_4$). Each Gm. of Potassium Glycerophosphate is equivalent to 5.24 mils of half-normal hydrochloric acid V. S.

PRUNUM

Prune.

The partly dried ripe fruit of *Prunus domestica* Linné (Fam. *Rosaceae*).

Oblong, ellipsoidal, more or less compressed, 3 to 4 cm. long; externally brownish-black, shrivelled; the sarcocarp sweet and acidulous; putamen hard, smooth or irregularly ridged; the seed, shaped like that of the almond but smaller, and of a bitter-almond taste.

PULSATILLA

Pulsatilla.

Pasque Flower. Meadow Anemone.

The dried herb of *Anemone Pulsatilla* Linné, *Anemone pratensis* Linné or of *Anemone patens* Linné (Fam. *Ranunculaceae*), with not more than 5 percent of foreign substances.

Leaves and flowering scapes matted, silky-villous; basal leaves with petioles up to 30 cm. in length, the latter hollow often purplish in color, the blades twice or thrice deeply three or four parted or pinnately cleft, the lobes linear and acute, the base of the petiole more hairy than above and frequently attached to the short root stock; flowering scapes up to 30 cm. in length, solid in the lower portion and hollow in the upper part, with sessile, involucral dissected leaves near the flower, occasionally with remains of the dull purple, hairy sepals and the dense woolly, plumose-tailed akenes; nearly odorless; taste very acrid.

The powder when viewed with the microscope, shows numerous simple thick walled hairs up to 2.5 mm. long and up to 0.020 mm. thick; tracheæ up to 0.030 mm. broad with spiral markings or with simple or bordered pores; fragments of epidermal tissue with stoma, the latter being broadly elliptical and up to 0.050 mm. in length; some epidermal cells with wavy vertical walls. Calcium oxalate crystals and starch grains are few or wanting.

An infusion of the drug is of a light yellow color which is intensified upon the addition of an alkali.

The yield of ash should not exceed 10 percent.

QUERCUS

White Oak Bark.

The dried bark of the trunk and branches of *Quercus alba* Linné (Fam. *Cupuliferae*), deprived of the periderm.

In nearly flat pieces, 2 to 10 mm. thick; externally light brown, becoming darker with age, rough-fibrous; fracture uneven, coarsely fibrous; odor distinct; taste strongly astringent; not tingeing the saliva yellow when chewed.

QUILLAJA

Quillaja. Soap Bark.

The dried bark of *Quillaja Saponaria* Molina (Fam. *Rosaceae*), deprived of the periderm.

In flat pieces of variable length, 3 to 8 mm. thick, or in small chips, outer surface brownish-white, often with small patches of cork attached, otherwise nearly smooth; inner surface yellowish-white, nearly smooth, with occasional circular depressions, conical projections or transverse channels; fracture uneven and strongly fibrous, the laminæ oblique to each other; odor slight; taste acrid.

The powder is strongly sternutatory, and contains calcium oxalate in monoclinic pyramids and prisms from 0.035 to 0.200 mm. long.

The yield of ash should not exceed 15 percent.

RENNINUM

Rennin.

The partially purified milk curdling enzyme, obtained from the glandular layer of the stomach of the calf *Bos taurus* Linné (Fam. *Bovidae*) and capable, when assayed by the process given below, of coagulating not less than 12,500 times its weight of normal, fresh cow's milk. As rennin deteriorates rapidly it should be kept in well-stoppered, amber-colored bottles and stored in a cool place, and not exposed to sunlight.

If it is desired to use a diluent for reducing Rennin of a higher coagulating power to the standard, sodium chloride and sugar of milk may be employed for this purpose.

A grayish-white or yellowish-white powder or pale yellow grains or scales having a characteristic and slightly saline taste and a

peculiar, not unpleasant odor. It should not be more than slightly hygroscopic.

It is slowly soluble in water and in diluted alcohol, the solutions being more or less opalescent.

When mounted in water or alcohol and examined microscopically, it shows no cellular structure and no blue coloration is produced on the addition of iodine T. S.

Assay—Mix 0.1 Gm. of Rennin with 50 mils of distilled water by stirring (vigorous shaking or violent agitation of this liquid must be avoided), and allow the liquid to stand for exactly 15 minutes. Place 50 mils of normal fresh cow's milk in a beaker about 12 cm. high and 5 cm. wide and warm rapidly on a water-bath to 43° C., add 2 mils of the rennin solution and stir the mixture slowly for 10 seconds. Maintain the temperature of the bath at 43° C. and at the expiration of 7½ minutes after the addition of the rennin solution, remove the beaker from the bath and tip it to an angle of 45 degrees. The milk must have lost its fluidity to the extent of exhibiting a decidedly convex surface. An additional 30 seconds on the water-bath should produce a firm curd.

RHUS GLABRA

Rhus Glabra. Sumach Berries.

The dried ripe fruits of *Rhus glabra* Linné (Fam. *Anacardiaceae*), without admixture of more than 5 percent of stems and other foreign matter.

Nearly globular, ovoid, more or les reniform, somewhat compressed, 5 mm. in length, 2 mm. in diameter; externally dark red, velvety with short hairs, summit with remains of the short style, base occasionally with the 5-cleft calyx and a short peduncle; endocarp, smooth, shiny, light red; 1-locular, 1-seeded; seeds dark brown, smooth, inodorous, taste acidulous and slightly astringent.

Powder—Brownish-red, under the microscope exhibits irregular fragments; nonglandular hairs, more or less elliptical or ovoid or spatulate; 0.150 mm. in length, 0.045 to 0.080 mm. in width, filled with a pink or red colored cell sap in which occasionally occur rod-shaped crystals; glandular hairs with a short 1 celled stalk and multicellular head, from 0.045 to 0.075 mm. in length; numerous fragments of endosperm; fragments of endocarp showing very small stone cells with irregularly thickened walls, readily determined by the use of aniline sulphate T. S. and sulphuric acid; fragments of embryo with rather small cells containing a fixed oil; occasional reddish colored fragments of epidermis and underlying spiral tracheæ of the mesocarp.

Mix 1 Gm. of powdered Rhus Glabra with 10 mils of hot water, shake the mixture occasionally until cold, then filter and evaporate the filtrate spontaneously in a watch crystal; numerous feather-shaped crystals which polarize light strongly with a distinct play of colors, should separate.

The yield of ash does not exceed 4 percent.

RUBUS

Rubus. Blackberry Bark.

The dried bark of the rhizome of *Rubus villosus* Aiton, *Rubus nigrobaccus* Bailey, or of *Rubus cuneifolius* Pursh (Fam. *Rosaceae*).

In elongated, tough, flexible quills or bands, from 3 to 6 mm. in diameter, the bark 1 to 2 mm. thick; outer surface deep red-brown or dark gray-brown, occasionally blackish-brown, smoothish or somewhat scaly; inner surface yellow or pale brownish, strongly and coarsely long straight-striate; fracture tough-fibrous, readily splitting; inodorous; taste strongly astringent and bitter.

RUMEX

Rumex.

Yellow Dock. Broad-leaved Dock. Curled Dock.

The root of *Rumex crispus* Linné or of *Rumex obtusifolius* Linné (Fam. *Polygonaceae*), without admixture of more than 5 percent of stem bases and other foreign matters.

Usually split longitudinally or cut into transverse pieces about 2 cm. long. The entire root, nearly simple, slightly tapering, with few if any rootlets, somewhat twisted, up to 30 cm. long and 7 cm. in diameter, externally reddish-brown or grayish from adhering soil, finely annulate above, deeply wrinkled longitudinally, marked with small indented root scars which are often transversely elongated and with occasional stem scars or remains of stem, the latter being hollow and finely striated, leaf buds few obconical; fracture short and dusty, somewhat fibrous.

The transverse section exhibits a yellowish or brownish cortex and a whitish or yel-

lowish wood which is finely radiate in the outer portion. When viewed with the microscope, it exhibits a thick cortex with several layers of cork, beneath which is an interrupted row of stone cells, a distinct cambium, vascular bundles with few fibers.

The powder when examined with the microscope, shows calcium oxalate crystals in rosette aggregates from 0.025 mm. to 0.060 mm. in diameter; numerous starch grains ellipsoidal or narrowly elongated, sometimes truncate, up to 0.025 mm. in length; stone cells 0.040 mm. to 0.200 mm. in diameter, with walls that are somewhat lamellated 0.008 mm. to 0.025 mm. thick and with few simple pores; sclerenchymatic fibers few, thin-walled with simple pores; tracheæ up to 0.100 mm. wide with scalariform or reticulate thickenings of the wall; cork cells light brown.

On mixing the powder with water and adding a solution of one of the alkalies a red color develops.

The yield of ash should not exceed 10 percent.

SALVIA

Salvia. Sage.

The dried leaves of *Salvia officinalis* Linné (Fam. *Labiatae*), without admixture of more than 10 percent of stems and other foreign matter.

Leaves more or less broken; the lamina when entire, varying from lanceolate or elliptical to ovate, 1.5 to 10 cm. in length, summits acute or obtuse, margin finely crenulate, bases rounded or somewhat heart-shaped and with petioles from 1 to 4 cm. in length; upper surfaces grayish-green, densely pubescent in young leaves, the older being nearly smooth; under surfaces light grayish-brown, minutely reticulate and densely pubescent; more or less pliable, velvety; odor balsamic; taste aromatic and bitter. Stems distinctly quadrangular, attaining a length of 14 cm. and a diameter of 3 mm., reddish-brown and more or less pubescent.

Powder—Yellowish-gray; examined with the microscope, it shows numerous non-glandular hairs, very long, consisting of from 1 to 6 cells, more or less curved and irregularly bent; fragments of epidermis showing yellow, globular, glandular hairs in which the structure is usually not readily discernible and varying from 0.015 to 0.075 mm. in diameter; glandular hairs of two kinds, either with a unicellular head-cell or with an 8-celled head. Fragments of the stems are distinguished by the presence of tracheæ with bordered pores associated with narrow, thick-walled, strongly lignified bast-fibers, a few starch-bearing cells of more or less rectangular shape, and large parenchyma cells of the pith having thin, lignified and porous walls.

The yield of ash does not exceed 12 percent.

SANTALUM ALBUM

White Sandal Wood.

The heart wood of Santalum Album Linné (Fam. *Santalaceae*).

In billets, pieces or chips of varying shapes and sizes, heavy, hard but splitting easily, color light yellow; transverse sections yellow to light reddish-brown, with alternating light and dark concentric zones nearly equal in diameter, with numerous pores and traversed by many very narrow medullary rays.

Under the microscope, sections show the *medullary rays* 2 to 4 rows wide, the cells thick walled and radially marked; the wood wedges consisting largely of wood fibers with pointed ends, large parenchyma and thick walled secretion vessels and cells containing single crystals of calcium oxalate; the oil in globules adhering to the walls of the ducts and parenchyma cells and especially rich in the medullary cells.

Odor characteristic, aromatic, persistent; taste peculiar, strongly aromatic.

The yield of ash does not exceed 6 percent.

SASSAFRAS MEDULLA

Sassafras Pith.

The dried pith of *Sassafras variifolium* (Salisbury) Kuntze (Fam. *Lauraceae*).

In sub-cylindrical, often curved or coiled pieces, 2 to 10 cm. in length, 2 to 5 mm. in diameter; very light in weight, externally whitish, occasionally with small fragments of adhering wood; fracture short; a slight odor of sassafras; taste mucilaginous.

Under the microscope, transverse sections of Sassafras Pith, mounted in phloroglucinol T. S. and hydrochloric acid, show that it consists of nearly isodiametric cells with large intercellular spaces, the walls being more or less lignified and provided with numerous, simple pores; mounts made in water show the separation of a thin layer of mucilage from the inner walls of the cells, this being characterized by the gradual disappearance of the pores.

Macerate 0.5 Gm. of Sassafras Pith with

25 mils of cold distilled water for several hours and filter it through cotton; a mucilaginous solution should be obtained which should not show a precipitate upon the addition of an equal volume of alcohol.

SCUTELLARIA

Scutellaria. Skullcap.

The dried plant of *Scutellaria lateriflora* Linné (Fam. *Labiatae*).

About 50 cm. long, smooth; stem quadrangular, branched; leaves opposite, petiolate, about 5 cm. long, ovate-lanceolate or ovate-oblong, serrate; flowers about 6 mm. long, in axillary one-sided racemes, with a pale blue corolla and bilabiate calyx, closed in fruit, the upper lip helmet-shaped; odor slight; taste slightly bitter.

The yield of ash does not exceed 12 percent.

SODII NITRAS

Sodium Nitrate.

It should contain, when dried to constant weight at 100° C., not less than 99 percent of pure Sodium Nitrate ($NaNO_3$=85.01) and should be kept in well-stoppered bottles.

Colorless, transparent, rhombohedral crystals, odorless, and having a cooling saline, and slightly bitter taste. Hygroscopic in moist air.

Soluble in about 1.1 parts of water, and in about 100 parts of alcohol at 25° C., in 0.6 part of boiling water, and in 40 parts of boiling alcohol.

When heated to 312° C., the salt melts without decomposition. At a higher temperature it evolves oxygen, and is reduced to nitrite. When Sodium Nitrate is heated with charcoal, the mixture deflagrates. To a non-luminous flame it imparts an intense yellow color.

Its aqueous solution is neutral to litmus paper.

If the aqueous solution be mixed in a test-tube with a drop of diphenylamine T. S., and sulphuric acid be carefully poured in, so as to form a separate layer, a deep blue color will appear at the line of contact.

The aqueous solution of the salt (1 in 20), slightly acidulated with hydrochloric acid, should not respond to the U. S. P. Time-Limit Test for *heavy metals*.

If to 10 mils of the aqueous solution of the salt (1 in 20) 1 mil of chloroform be added, and then chlorine water which has been diluted with an equal volume of water be introduced, drop by drop, with agitation, the chloroform should remain free from any violet tint (absence of *iodide*).

Assay—Weigh accurately about 0.4 Gm. of Sodium Nitrate, previously dried to constant weight at 100° C., dissolve it in 10 mils of hydrochloric acid in a small dish and evaporate the solution to dryness on a water-bath. Dissolve the residue in 10 mils of hydrochloric acid and again evaporate it to dryness on the water-bath, continuing the heat until the residue when dissolved in distilled water is neutral to litmus. Dissolve the residue in 25 mils of distilled water, add 50 mils of tenth-normal silver nitrate V. S. agitate well, then add 2 mils of nitric acid and 2 mils of ferric-ammonium sulphate T. S. and titrate the excess of silver nitrate V. S. with tenth-normal potassium sulphocyanate V. S. After deducting from the silver nitrate V. S. consumed the amount which would be consumed by the chlorides present in an equivalent weight of the sample, previously determined as directed by the U. S. Pharmacopœia, the result shows not less than 99 percent of $NaNO_3$.

Each milliliter of tenth-normal silver nitrate V. S. used corresponds to 0.008501 Gm. $NaNO_3$.

Each gramme of Sodium Nitrate, previously dried to constant weight at 100° C., corresponds to not less than 116.457 mils of tenth-normal silver nitrate V. S.

TAMARINDUS

Tamarind.

The preserved pulp of the fruit of *Tamarindus indica* Linné (Fam. *Leguminosae*).

A pulpy mass of a light reddish-brown color, darkening with age so as to become dark brown, containing some branching fibres and numerous reddish-brown, smooth, oblong or quadrangular, compressed seeds, each enclosed in a tough membrane; odor distinct; taste sweet and agreeably acid.

TEREBINTHINA

Turpentine.

A concrete oleoresin obtained from *Pinus palustris* Miller and from other species of *Pinus* (Fam. *Pinaceae*).

Turpentine occurs in yellowish, opaque masses, lighter internally, sticky and more or less glossy, brittle in the cold; odor and taste terbinthinate.

It is freely soluble in alcohol, ether, chloroform, and glacial acetic acid.

Its alcoholic solution shows an acid reaction with litmus.

Dissolve about 1 Gm. of Turpentine, accurately weighed, in 25 mils of alcohol, collect the insoluble residue, if any, on a filter which has been dried at 100° C. and weighed. Wash the residue, and filter with about 25 mils of alcohol and dry at 100° C. The weight of the residue should not exceed 2 percent (*mechanical impurities*).

VIBURNUM OPULUS

Viburnum Opulus.

Cramp Bark. High Cranberry Bark.

The dried bark of *Viburnum Opulus* Linné (Fam. *Caprifoliaceae*), without admixture of more than 5 percent of wood and other foreign matter.

In strips, or occasionally in quills or chip-like fragments, the bark attaining a thickness of 3 mm.; outer surface of the thinner pieces of a light gray color with crooked, longitudinal, purplish-brown strips and very small brown lenticels, the thicker pieces purplish-red or occasionally blackish, except when very young, and more or less finely fissured or thinly scaly; inner surface varying in color from yellowish to rusty-brown, with very short oblique striæ, except where the outer wood layer adheres; fracture short and weak, the fractured surface mostly whitish, varying to pale brown in the inner layer, rusty brown in the outer layer covering green, tangential, phelloderm plates; odor strong and characteristic; taste mildly astringent and decidedly bitter.

Under the microscope, sections of Viburnum Opulus show an outer corky layer, of 5 to 25 rows of cells the walls nearly colorless, frequently thickened on the inner surface, individual cork cells from 0.015 to 0.045 mm. in radial diameter and from 0.030 to 0.075 mm. in tangential diameter; outer bark of about 10 rows of cells containing a brownish-yellow, amorphous substance, small starch grains or chloro-plastids; medullary rays 1 to 2 cells in width, usually not more than 1-cell wide; inner bark with occasional groups of bast fibers composed of 1 to 10 cells, the walls being very thick, non-lignified, lamellated and finely porous; adhering wood with large tracheæ having scalariform or reticulate thickenings, and being surrounded by wood-fibers with thick lignified walls; starch grains, mostly in cells of parenchyma and medullary rays, either single or compound, the individual grains not exceeding 0.006 mm. in diameter; calcium oxalate in rosette aggregates, 0.015 to 0.040 mm. in diameter; numerous fragments of parenchyma cells, the lumina filled with a reddish-brown amorphous substance.

Powder—The powder of Viburnum Opulus is light grayish-brown, consisting of irregular fragments; cork cells polygonal, with thin, colorless walls; parenchyma with rosette aggregates of calcium oxalate, from 0.015 to 0.040 mm. in diameter; starch grains very small and mostly in parenchyma cells; fragments of parenchyma containing a brownish-yellow amorphous substance; occasional tracheal fragments associated with lignified wood-fibers.

XANTHOXYLUM FRUCTUS

Prickly Ash Berries.

The dried fruit of *Xanthoxylum Americanum* Miller (Northern Prickly Ash) or of Xanthoxylum *Clava-Herculis* Linné (Southern Prickly Ash) (Fam. *Rutaceae*).

Capsules with short stalks (X. Americanum) or without stalk (X. Clava-Herculis) when fresh ellipsoidal, fleshy, gray-brown, when dry dehiscent; carpels 2, keeled, apex short pointed, seeds 1 or 2 oblong, black, shining and wrinkled from drying. The carpels have a pungent, warm, aromatic taste and on chewing leave a tingling sensation on the tongue; when breathed upon emits a fraintly aromatic odor resembling that of citral.

ZEA

Zea. Corn Silk.

The fresh styles and stigmas of *Zea Mays* Linné (Fam. *Gramineae*).

In slender filaments from 10 to 20 cm. in length, and about 0.400 mm. in diameter; of a light green, purplish-red, yellow or light brown color; stigmas bifid, the segments very slender, frequently unequal and 0.400 to 3.000 mm. in length.

Under the microscope, the styles are seen to consist for the most part of parenchyma and two parallel, vascular bundles with narrow, spiral or annular tracheæ; the epidermal cells are rectangular, many of which are extended into multi-cellular hairs, the latter being from 0.200 to 0.800 mm. in length, the basal portion consisting of 2 to 5 united cells,

the upper portion being usually unicellular, the cells of the hairs are rich in cytoplasm and usually contain a small, spherical nucleus; the purplish-red styles contain a purplish-red cell cap.

Digest a small portion of the fresh styles and stigmas in diluted alcohol and filter; a pale purplish-red solution should be obtained, portions of which upon the addition of acids, should become either of a distinct purplish or yellowish-red color, and upon the addition of alkalies of a green color, and with ferric chloride T. S. an olive-green color changing to greenish-brown, and upon the addition of an aqueous solution of alum a bluish or purplish color which is quite permanent.

ZEDOARIA

Zedoary.

The dried rhizome of *Curcuma Zedoaria* Roscoe (Fam. *Zingiberaceae*).

Usually cut into transverse rounded sections, twisted and wrinkled, 1 to 4 cm. in diameter, 5 to 10 mm. thick; externally grayish-brown, hairy, rough, with a few root scars; transverse surface pale reddish to gray-brown; a distinct dark circular endoderm separates the cortex which is 2 - 5 mm. wide; the stele contains numerous orange-colored resin cells and irregularly distributed lighter colored wood bundles which are fewer in the cortex. Fracture short, somewhat mealy and waxy; odor aromatic, camphor like; taste aromatic, warm, slightly bitter.

Under the microscope, sections show a thick cork, a thin epidermis with numerous characteristic hairs, thick walled 1- to 6-celled up to 1 mm. long and often thicker in the middle than at the base; the parenchyma of the cortex and of the central cylinder rich in starch; secretion cells isodiametric with suberized walls, contents colorless or yellowish; the endodermis of small, thin walled quadratic cells; the fibrovascular bundles, collateral, more numerous in the central cylinder and nearer the endodermis; few bast fibres in the cortex and no crystal cells.

Powder—Rich in starch, egg-shaped, 0.020 to 0.070 mm. long and 0.007 to 0.012 mm. thick, eccentric, the nucleus in the smaller end; numerous characteristic, thick walled hairs; rich in parenchyma; very few bast fibres and no oxalate crystals or stone cells.

The yield of ash should not exceed 7 per cent.

NEW TEST FOR REDUCING SUGARS IN URINE.

According to W. Cramer (*Journ. Soc. Chem. Ind.*, 1915, p. 579), the test depends on the reduction of mercuric oxide in slightly alkaline solution to metallic mercury. The reagent is prepared by dissolving 0.4 Gm. of mercuric oxide and 6 gm. of potassium iodide in 100 cc. of water, and adjusting the alkalinity of the mixture, by the addition of $N/10$ acid or alkali solution, so that 10 cc. requires exactly 2.5 cc. of $N/10$ acid for neutralization, using phenolphthalein as indicator. To apply the test, 3 cc. of the reagent are heated to boiling, 0.3 cc. of the urine is added, the solution again boiled, and, after the lapse of 30 seconds, acidified with acetic acid. Normal urine containing the usual quantity (0.1 to 0.2 per cent of dextrose) yields a very slight turbidity; when the sugar-content increases to 0.5 per cent a distinct turbidity is produced. The reagent may be made more sensitive by increasing its alkalinity, but the normal quantity of sugar in urine then interferes by producing a turbidity; other substances, such as creatinine, also reduce strongly alkaline mercuric oxide solutions. The acetic acid is added to dissolve precipitated phosphates.—*Merck's Report.*

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E. G. EBERLE, Editor.....Columbus, Ohio

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Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

SOME EFFECTS OF SELECTION ON PRODUCTION OF ALKALOIDS IN BELLADONNA.

The above is the title of Bulletin No. 306, U. S. Department of Agriculture Bureau of Plant Industry. The investigations reported in this bulletin cover some effects of the production of alkaloid in belladonna and gives results of a series of tests on controlling pollination. The conclusions reached are stated in the bulletin as follows:

It having been established in the previous investigation that a wide range of variation exists in the akaloidal content of belladonna plants, the present investigation was undertaken to determine whether the characteristic of alkaloid production is transmissible to the progeny through seed and whether the character is changed by vegetative propagation. The results thus far show that the first-generation plants secured from seed of cross-pollinated selected individuals display the characteristic of the maternal parent with regard to alkaloid productivity. This condition is generally true at all stages of growth during a season and also for at least two successive seasons. Close pollination of the parent plant has shown only a moderate influence on the transmission of this characteristic.

Second-generation plants from cross-pollination have been grown at Arlington, Va., Madison, Wis., and Timmonsville, S. C., and at all three stations they have displayed the relative alkaloid-producing tendencies evident in the original parent plant and the generation preceding.

While the plants at the different localities showed a parallel relationship toward each other, there was considerable difference in the general quantity of alkaloids produced. Thus, in the case of Madison and Arlington, where two pickings were made at fairly corresponding stages of growth, it was found that the Madison plants yielded more alkaloids than those at Arlington. At Timmonsville the yield was still greater than at Madison, but here only one picking was made, and it is hardly possible to make a true comparison. Nothing definite developed to indicate that a relationship exists between the amount of precipitation and sunshine and the percentage of alkaloids produced.

Plants were grown from cuttings, and at two stages of their growth these plants showed a marked tendency to display the same characteristic regarding alkaloid production as the plants from which they were propagated and the original parents of those plants.

PAN-AMERICAN SCIENTIFIC CONGRESS.

Arrangements have been completed for holding a Pan-American Scientific Congress in Washington from December 27, 1915, to January 8, 1916, in which all of the American republics will participate.

According to the official reports from each of the governments now in the hands of Director-General John Barrett of the Pan-American Union, each one of the twenty-one American republics will appoint delegations composed of its leading educators, economists, engineers, international lawyers, and experts on mining, agriculture, health, transportation and finance. This meeting will signalize an effort to promote closer relations among the American republics along intellectual and educational lines, rather than along political lines. In the same way that the regular international conferences of the American republics have developed closer political ties and the recent Pan-American financial conference helped to promote better financial understanding, so, correspondingly, this congress will bring the Americans more intimately together upon a high plane of intellectual, scientific, educational, and social progress and intercourse.

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MAGNESIUM AND SODIUM SULPHATES IN PLASTER OF PARIS.

The sulphates of magnesium and of sodium have been found in almost all the samples of plaster examined by the author. They are generally present in almost the same proportions and occur in the largest quantity in impure plasters. Their presence has an important influence on the setting of the plaster, markedly hastening the period of hardening. When the proportion in which they occur amounts to only a few parts per thousand, they hasten the period of setting by six minutes, and a few percentages will shorten the time of hardening to one-third of the normal period. In this respect sodium sulphate appears to be more active than magnesium sulphate. These two salts are specially useful for employment in making surgical casts, since they have but slight influence in increasing the temperature of the plaster magma. The introduction of 1 per cent of each salt causes a rise of temperature of only 12° C. When sodium chloride is used for a similar purpose, the increase of temperature is so great that there is danger that the patient may be scalded.—E. Canals (*J. Pharm. Chim.*, 1915, II, 286.)

Book Notices

THE PHARMACOLOGY OF USEFUL DRUGS.—By Robert A. Hatcher, Professor of Pharmacology, Cornell University Medical College, New York, and Martin I. Wilbert, Technical Assistant, Division of Pharmacology, Hygienic Laboratory, U. S. Public Health Service. American Medical Association, 535 North Dearborn Street, Chicago. 1915.

This volume of 457 small 8 vo. pages is a reprint, with additions and changes, of a series of articles published in the Journal of the American Medical Association under the heading "Practical Pharmacology."

The presentation of the material in the form of a bound volume constitutes an attempt to interest medical students and practitioners in the uses and possibilities of the more widely used drugs which are generally well established.

The book includes a comprehensive discussion of the pharmacology, the chief therapeutic uses and the materia medica or chemical and physical properties of the drugs that have been included by the Council on Pharmacy and Chemistry of the American Medical Association in the "Handbook of Useful Drugs." As an elaboration on this list of drugs the present volume will no doubt be of value to all who are in any way interested in the "Handbook of Useful Drugs" either as a basis for instruction in materia medica subjects in medical schools or as a basis for examinations in Therapeutics by State Medical Examining and Licensing Boards.

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Hygienic Laboratory Bulletin No. 104; a Digest of Comments on the Pharmacopoeia of the United States and on the National Formulary for the Calendar year ending December 31, 1914, is announced in a recently published list of publications of the United States Public Health Service as available for free distribution. Application for this publication should be made to "The Surgeon-General, United States Public Health Service, Washington, D. C." and should specify both the title and number of the document desired. No charge is made for postage. As the number of copies of this publication available for free distribution is limited, members of the American Pharmaceutical

Association and others who may be interested should apply promptly so as to insure the distribution of the Bulletin to persons who will find it of use and value.

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SCIENTIFIC AND APPLIED PHARMACOGNOSY.—Intended for the use of students in pharmacy, as a handbook for pharmacists, and as a reference book for food and drug analysts and pharmacologists by Henry Kraemer, Ph. B. (in chemistry), Ph. M. (in pharmacy), Ph. D. (in botany), Professor of Botany and Pharmacognosy, and Director of the Microscopical Laboratory, in the Philadelphia College of Pharmacy; Member of the Executive Committee of Revision of the Pharmacopoeia of the United States of America, Corresponding Member of the Société de Pharmacié de Paris, etc. Illustrated with over 300 plates comprising about 1000 figures. Published by the author, 145 North 10th Street, Philadelphia.

This handsome, large 8 vo. of 837 pages is now available as the companionbook to the volume on Applied and Economic Botany published by the same author some months ago.

In the preface to the present volume the author very properly asserts that because of the role played by vegetable substances in the treatment of disease pharmacognosy takes rank as one of the most important divisions of applied botany. The training for this study is fundamentally botanical and the technique employed is essentially that of the plant morphologist, physiologist and taxonomist. The preface further states that the domain of pharmacognosy, because of the diversity of interests, is one of the most fascinating studies that can engage the attention of pharmacists.

It would be difficult indeed for anyone at all interested in pharmacy or any one of the many related studies to review the text and the many handsome illustrations in this volume on scientific and applied pharmacognosy without appreciating the truth of the statements made by the author in the preface as quoted above. The nature, composition, origin and romance of drugs are emphasized in this book in a way that must appeal to all who are either directly or indirectly interested in drugs and their uses. A natural classification has been adopted and the plants and drugs mentioned are grouped according to "Die naturlichen Pflanzenfamilien" of Engler and Prantl, now generally followed by writers on botany. The book also includes a chapter on powdered drugs and a key for the study of powders. Reference is made easy by a comprehensive index of 20, three column, pages containing more than 3300 references.

M. I. W.

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WINDOW DISPLAY FOR DRUGGISTS.—By Harry B. Mason. Third Edition. E. G. Swift, Detroit, Mich.

The very fact of a third edition of a pharmaceutical book is noteworthy, and shows that the efforts of the author were well appreciated by those for whom the book was written. Mr. Mason has a remarkable gift of recognizing the practical wants of the everyday druggist, and understands how to supply a remedy for certain pharmaceutical ailments that others overlook, or consider of no account. The importance of proper window displays must be apparent to every observer who strolls through the streets of a big city and keeps his eyes open. It is nothing unusual to see placards of a cough syrup that were put in the window in the Spring, covered with fly specks in August; or others that announced insect destroyers in Summer, remain there till Christmas. There certainly is a need to call certain negligent druggists to order, teach them the use and value of attractive displays, and give them suggestions on the subject of window dressing in general. The third edition of this useful little book has added thirty-two descriptions and engravings of new trims to the former ones and is a living testimonial of the skill and good judgment of the author. The publishers also deserve credit for the neat and attractive typographical execution of the volume.

W. C. A.

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COLLECTED PAPERS FROM THE RESEARCH LABORATORY.—Parke, Davis & Co., Detroit, Mich. Dr. E. M. Houghton, Director. Reprints. Volume 3, 1915.

This volume of 341 large 8 vo. pages contains reprints of 22 original communications of pharmaceutical and pharmacologic interest.

Among the papers that are largely pharmaceutical, it will suffice to enumerate: U. S. P. Menstrua, by H. C. Hamilton; The Sterilization of Adrenalin Solutions, by L. W. Rowe; Disinfection and Disinfectants, by H. C. Hamilton; the Bacteriological

Standardization of Disinfectants, by H. C. Hamilton; The Pharmacy of Adrenalin, by C. P. Beckwith. These and the other papers in this volume contain much that is of value in addition to the subject matter announced in the titles. This varied information could be made more readily available by appending a more or less comprehensive index to the individual volume or better still by compiling in connection with a future volume an index to the material already published. Even as they are these reprints constitute an important contribution to the literature on the properties and uses of drugs that should be known to all who are in any way interested in pharmacology or related branches.

M. I. W.

Obituary

GEORGE D. FELDNER.

George D. Feldner, senior, sixty-one years old, died recently in New Orleans, where he had been engaged in the drug business for forty-five years. During the scourge of 1878, Mr. Feldner, then a young druggist, volunteered his services as druggist to the cause and gave freely of his time and means.

In the death of Mr. Feldner, New Orleans loses one of its oldest and best known druggists. He typified the southern gentleman of the old school, a man who was ever gentle and kind to those with whom he came in contact and who, on account of his genial disposition, numbered friends in all the walks of life. To the poor he was most kind, and without ostentation, gave them such assistance as he could.

He became a member of the Board of Trustees of the New Orleans College of Pharmacy a few weeks after its organization, and his devotion to the institution was most loyal, being a constant attendant at all its meetings except when sickness prevented. For thirteen years he was the President of the College and his services at all times, especially when the institution needed them most, were most valuable.

He became a member of the American Pharmaceutical Association in 1913.

At the time of his demise, Mr. Feldner was a member of the Democratic State Central Committee, and a prominent Mason, Pythian and Druid, and an honorary member of the Washington Artillery.

He is survived by his wife, one son and two daughters.

J. W. E.

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G. H. CHAS. KLIE.

G. H. Chas. Klie, as he was familiarly known, died at his home in St. Louis, September 24, 1915, in his seventieth year. Cancer was the immediate cause of death. He was born in Germany in 1845 and came to this country as an orphan, at an early age. An uncle who cared for him intended to educate him for the clergy. He, however, drifted into pharmacy. He was located at 5100 North Broadway, St. Louis, for more than forty years. Although much interested in pharmacy, he studied medicine about twenty years ago and soon had a good practice which was carried on in connection with the drug business.

Dr. Klie belonged to the old German type of pharmacist of which he was one of the very last remaining in St. Louis. He was for years secretary of the Mo. Ph. A. and always interested in the A. Ph. A., of which he became a member in 1878. He was a life member of the St. Louis College of Pharmacy and served as secretary for several years. He was for ten years assistant secretary of the United States Pharmacopœial Convention. His contributions to pharmacy were always instructive and practical. A case he reported to the St. Louis Medical Society caused very favorable comment not only on account of the very careful study which Dr. Klie had given the subject but the very clear and concise manner in which he described the disease and explained his conclusions.

As a citizen and Christian gentleman, Dr. Klie measured up to the highest standard.

Among the active pall-bearers were Messrs. Francis Hemm, Robert E. Schlueter and H. M. Whelpley, of the St. Louis College of Pharmacy.

H. M. W.

Societies

PHI DELTA CHI FRATERNITY CONVENTION.

The sixteenth annual Grand Council of the Phi Delta Chi Fraternity was held in San Francisco August 12th, 13th and 14th, simultaneously with the convention of the American Pharmaceutical Association. The objects of the fraternity are to advance the sciences of pharmacy and chemistry among college men and to foster and promote a fraternal spirit among its members.

Among the delegates representing the various chapters were the following: Dean W. J. Teeters of the State University of Iowa; Caswell A. Mayo and Dr. Geo. Diekman of New York; Azor Thurston, State Chemist of Ohio; Mr. R. A. Lyman and Mr. Niels P. Hansen of the University of Nebraska; Dean Wulling, Prof. E. L. Newcomb, Mr. I. H. Robitshek and Mr. Peterson of the University of Minnesota; Dean C. W. Johnson of Seattle; Mr. Fox of Columbus, Ohio; Prof. E. H. La Pierre of Boston; Prof. Poe of University of Colorado; W. G. Gaessler of the Iowa State College at Ames; and Dr. Hayden M. Simmons and many others of the University of California.

In addition to many other matters of importance accomplished during the meetings, a scholarship prize to be known as the "Azor Thurston Scholarship Prize" was established and as a result the active chapter of the fraternity having the highest average grade in his studies for the year will be awarded $25 in cash. Also a silver loving cup to be known as the A. B. Prescott Scholarship Cup will be presented to the chapter ranking highest in scholarship. Any chapter winning this cup three times may keep it permanently.

The following national officers were elected for the ensuing year:

Azor Thurston, Grand Rapids, Ohio—Grand President.

J. C. Buckner, Galveston, Tex.—Grand Vice President.

W. G. Gaessler, Ames, Iowa—Grand Secretary.

F. F. Ingram, Jr., Detroit, Mich.—Assistant Grand Secretary.

Niels P. Hansen, Lincoln, Neb.—Grand Treasurer.

Edward Spease, Columbus, Ohio—Grand Editor.

The next Grand Council will be held in Minneapolis in February, 1916.

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THE TAXES ON TOILET ARTICLES.

We publish the following letter because it has an interest for retail druggists and in order that such action as may be deemed necessary may be taken. Some thoughts are embodied and emphasized that are deserving of consideration.

To Our Friends In the Trade:

The recent utterances of the Secretary of the Treasury, that it is the purpose of the administration to ask Congress to continue the present Emergency War Revenue Act until the conclusion of the war in Europe, causes us to bring to the attention of the trade and the American people generally the great injustice of the tax on perfumes and other toilet preparations levied under the aforementioned act.

It is inconceivable that Congress, when placed in possession of the facts, will continue the imposition of a tax that is not only inequitable, but likewise so contrary to the express intent of its authors, in that it is not a tax on the *consumers* of luxuries, but a tax on the *manufacturers* and *retail dealers* in these articles.

The wording of the Emergency War Revenue Act makes it practically impossible to pass the tax on to the consumer. How can one-eighth or one-quarter of a cent be added to the retail price of an article without either splitting a cent into fractional coins or else multiplying the tax to the consumer in order to make it a full cent. This injustice the consumer would be sure to resent and to nullify by an appeal to trade competition, thus saddling the tax on the *retailer*.

Taking the expressed intention of Congress, that the tax levied according to Schedule "B" of the Emergency War Revenue Act is a tax on the *consumer* of luxuries, the injustice of the tax is immediately apparent in these enlightened days of sanitation and hygiene, by the inclusion in the list of taxable articles of such absolute necessities of modern civilized life as perfumery, dentifrices, talcum powders, deodorants, mouth washes, cold creams and hair tonics.

If these articles are to be classed as luxuries, why not include all other luxuries in the list? Why arbitrarily single out for special and discriminatory taxation the manufacturers, or dealers in one class of questionable luxuries, and leave the great mass of unquestioned luxuries untaxed?

Under existing conditions, no possible excuse exists for this form of taxation. Were this country at war, we would cheerfully contribute to the requirements of any emergency situation. But, we are at peace with all the world, and a proper revenue system would most certainly make adequate provision for the financial necessities of the Government.

But even conceding for the moment that our industry is properly the subject of discriminatory taxation: what defense can be found for an arbitrary tax that takes no heed of our incomes, profits or losses, but that demands a huge daily tribute, even though it involves a great financial loss to us, or as an alternative, demands that we pass the burden along to the retailer

Let us see just what this tax means. A tax of one-eighth of a cent on a 5-cent article at retail is 2½ per cent, or on the manufacturer's average price of 2½ cents for a 5-cent article, 5 per cent. This tax of 5 per cent runs through the entire series of 5, 10, 15-cent and other retail prices.
this enormous tax, imposed in the face of war conditions in Europe which have greatly increased the cost of raw materials for perfumes and other toilet preparations, is levied regardless of whether the manufacturer is making or losing money. To all of us, the payment of this tax is proving an intolerable burden, and to many of the most reputable and worthy members of our industry it means downright confiscation.

The manufacturer doing a business of $250,000 a year considers himself fortunate if his net profits, exclusive of the war tax, are 10 per cent, or $25,000 a year. Now, however, the Government steps in and appropriates 5 per cent of the business total, or $12,500—just 50 per cent of his net earnings. But this is not the worst of it. If the business should for any reason show a loss of $25,000 a year, the Government would nevertheless exact from the unfortunate manufacturer the identical tribute of $12,500.

As manufacturers in the industry thus assailed, we enter our solemn protest to the National Government and the American people. If the tax is reimposed at the coming session of Congress, we shall have to determine for ourselves individually the expediency and necessity, as a measure of self-preservation, of passing the burden along to the retailer, who, it is hoped, will find a way to combat or escape the severity of the tax. It is hoped that this necessity will not be forced upon our industry, and we therefore urgently appeal to our friends in the retail trade to aid us in bringing the facts before the attention of Congress.

We repeat: there is not a shadow of reason why we should be made the exclusive victims of discriminatory taxation. We ask no favors. But, we do demand the same measure of justice that is extended to all other legitimate industries.

No other American industry, we contend, yields to the Government a 700 per cent tax on alcohol; a 20 per cent increase in the tariff on its raw materials; a corporation and income tax, and a present tremendous increase in the cost of its raw materials, besides an increased custom tax derived from this increased cost of these raw materials.

As to the foregoing, we have entered no open protest or complaint. But when on top of these contributions to the National Revenue, a far greater tax is to be again indefinitely imposed on our business, a sense of self-respect forbids that we remain silent.

A. M. SPIEHLER,

President, The Manufacturing Perfumers' Association of the United States, 309 Broadway, New York City.

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COMMITTEES NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION.

President Charles Gibson, of the National Wholesale Druggists' Association, has announced appointments of the committees to serve during the ensuing year, the names of each chairman being given, as follows:

Commercial Travelers—Henry D. Faxon, Kansas City, Mo., Faxon & Gallagher Drug Co.

Credits and Collections—R. R. Ellis, Memphis, Tenn., Hessig-Ellis Drug Co.

Drug Market—C. L. Huisking, New York.

Employers' Liability—C. W. Whittlesey, New Haven, Conn., the Chas. W. Whittlesey Co.

Fire Insurance—C. E. Bedwell, Omaha, Neb., E. E. Bruce & Co.

Legislation, Geo. W. Lattimer, Columbus, Ohio, Kauffman-Lattimer Co.

Local Associations, C. S. Martin, Nashville, Tenn., Spurlock-Neal Co.

Membership—G. Barrett Moxley, Indianapolis, A. Kiefer Drug Co.

Memorials—H. J. Schnell, New York, Oil, Paint and Drug Reporter.

Prevention of Adulteration—C. Mahlon Kline, Philadelphia, Smith, Kline & French Co.

Proprietary Goods—W. P. Ritchey, New York, Bruen, Ritchey & Co.

Rates and Routes—Chas. E. Matthews, Chicago. Ill., Sharp & Dohme.

Trade-Marks—E. K. Hyde, Buffalo, N. Y., Mentholatum Co.

Transportation—A. H. Van Gorder, Cleveland, Ohio, Hall-Van Gorder Co.

Suits—W. Jay Schieffelin, New York, Schieffelin & Co.

Paints, Oils and Glass—Nelson P. Snow, Syracuse, N. Y., C. W. Snow & Co.

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STEVENS BILL INDORSED BY NEW YORK RETAILERS.

About 300 retail merchants, representing practically all branches of trade in Greater New York, gathered at the Hotel Astor on October 27 to discuss ways and means for bringing about the passage of a price maintenance measure at the next session of Congress.

Dr. W. C. Anderson, chairman of the Conference of Independent Retailers of the Metropolitan District, Inc., under whose auspices the meeting was held, called the meeting to order and introduced the speakers of the evening.

Dr. Lee Galloway, professor of commerce and industry at New York University, spoke of the social and economic foundation underlying the price maintenance idea. He stated that nearly all evils in merchandizing could be traced back to price-cutting.

He pointed out that retail merchants generally regarded trade-marked and proprietary articles unfavorably and made little effort to sell them because of the prevailing cut prices. It would, therefore, be to the interest of the manufacturer as well as to the retailer if a set price were maintained. Looking at it from the consumer's point of view, Professor Galloway said that while the argument might be advanced that maintained prices would mean greater outlay for some articles by the public, the doing away with advertised sales of standard articles at cut rates in order to coax people into an establishment and then sell them something else on which a huge profit is made would by far overshadow this objection.

Samuel C. Henry, chairman of the Legislative Committee of the N. A. R. D., said that the success of legislation covering price maintenance depended on the amount of energy put behind the Stevens bill by the retailers. He guaranteed the support of the organization which he represented in bringing about the passage of this bill.

Dr. Anderson made a plea for co-operation on the part of all retail merchants in protecting their individual interests. He urged the retailers to see their Congressmen and place before them the arguments for the necessity of price maintenance.

Before adjournment was taken, resolutions were adopted indorsing the Stevens bill and protesting against the unfair methods used to oppose its passage. These resolutions were ordered to be sent to the President, all members of both houses of Congress, all members of the Federal Trade Commission, all members of the State legislature and to the Governor.

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RECIPROCAL REGISTRATION FOR PHARMACISTS ESTABLISHED WITH THIRTY-SIX STATES

Interchange of Certificates Becoming Universal.

Registered Pharmacists who are registered by examination with certain grades and other qualifications in any of the 36 "active" member states of the National Association of Boards of Pharmacy may now secure registration by reciprocity to any other member state of the Association. The official application with instructions for executing and filing the same, may be obtained from H. C. Christensen, Secretary N. A. B. P., No. 450 Bowen Avenue, Chicago, Illinois, by remitting the required fee of $5.00. Also any inquiry regarding reciprocity will receive prompt attention. The list of active and associate members follows: Active: Alabama, Arkansas, Arizona, Connecticut, Delaware, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri,

Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin.

Associate: Colorado, New York, North Carolina, Pennsylvania.

While extending reciprocal registration is one of the objects of the N. A. B. P., that Association has other and, perhaps, more important functions—some of which might be mentioned:

(a) Higher standards of education both as regards preliminary and college education.

(b) More uniform examinations by Boards of Pharmacy—based on minimum standards of Pharmaceutic education and uniform legislation.

(c) Placing the Association on a financial basis that will enable it to render to members, schools, etc., the highest degree of service.

Decidedly better conditions are being brought about with reference to some of these conditions by the tendency to closer coöperation between those who teach pharmacy and those who pass final judgment on candidates for registration as pharmacists.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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BALTIMORE.

Minutes of the October meeting, Baltimore Branch, American Pharmaceutical Association, held in the Assembly Hall of Hynson, Westcott & Company's Pharmacy, S. E. corner Charles and Franklin Streets, Wednesday, October twentieth, Nineteen Fifteen, at eight p. m.

The notice of the meeting read: As this is to be the first meeting after the summer recess, it is to be more in the nature of an autumn rally. During this recess, the meeting of the parent association has been held, as well as those of the other pharmaceutical bodies and the Baltimore delegates to these meetings are full up to overflowing with enthusiasm, information and ideas and they are to be with us and are to share them with us, so that the coming meetings should be the best in the history of the Baltimore Branch. Some of the delegates are too modest to allow their names to appear on the program, so all the names have been withheld and as there are other things besides those strictly pharmaceutical to be told after a trip from ocean to ocean this meeting should be a rally, not only for pharmacy, but also for our glorious country.

In the absence of the president, Mr. Hodson, Mr. Robert S. McKinney was called to the chair and he presided.

Dr. Engelhardt, who was to have reported, telephoned his inability to be present as visitors from a distance had unexpectedly arrived at his home and he would have to withhold his remarks for a later meeting.

During the different accounts of the meeting in San Francisco, it was brought out that Maryland was very well represented and in proportion to its membership was the best represented of the eastern states.

Six members of the Branch were present; one of the members took his family along, and one member went all the way to Alaska.

Mr. McCarthy of the New York Branch, who is an ex-Baltimorian, was also present on the coast and was likened to the title of Otis Skinner's play at one of the local theatres, in that he seemed to be the "Cock of the Walk."

There was a little criticism of the editing of the accounts of the meeting in that some of the names of those present were misspelled, Miss Cole appearing under the aliases of Cote, Kohl, *et cetera*.

The attendance, to those who have been used to larger meetings in the east, seemed small, but when the distance from the great centers of population was considered, along with the work done, put in shape and planned for the future and when it was realized that the results of the deliberations will be manifested in progress in pharmacy and result in enactments by congress and the legisla-

tures, the meeting was a good one and a great deal was accomplished.

The report of the Commission on Proprietary Medicines was considered at length and was thought to be a step in the right direction and credit should be given to J. H. Beal for his untiring work along these lines.

It was brought out that Mr. Hover of the National Association of Wholesale Druggists reported that after thorough investigation in a number of cases that 13½ per cent was the average profit on prescriptions in the ordinary stores and places were actually losing money on their investments in stock.

Dr. Engelhardt's report as chairman of the Scientific Section was lauded and Mr. Lowry's paper on "A Seven-Barrelled Moth Ball Sale," read before the Commercial Section, was commended.

The right and wrong ways of advertising were commented on and it was brought out that in West Virginia the laws were such that a concern was fined for advertising as pure wool, clothing that was a mixture of wool and cotton, and that pure advertising is practically as necessary as pure food and drugs.

The number of women in pharmacy in the west surprised some and was contrasted with conditions in the east where they seemed to be limited to the hospitals and dispensaries.

The fearful and wonderful manner in which some kind of a hybrid mixture of pharmacy, medicine and superstition is conducted in the oriental drug stores in Chinatown caused smiles and horror and afforded amusement.

The banquet was considered the most hilarious in the memory of the oldest delegate and although there were various hints as to the Zone at the exposition, the tales that could be told about it were reserved for another occasion.

Mr. Frames reported for the National Association of Boards of Pharmacy that the word had gone forth that for 1920 high school education and graduation in pharmacy were planned as preliminaries to registration.

Mr. Lowry, in discussing the idea of a line of proprietary medicines trade-marked by the Association and manufactured by the pharmacist, stated that he had intended writing a paper on the subject, but had gotten no farther than the unthreaded notes and expressed it as his individual opinion that, if the Association did act in the matter, it would be better to have the manufacturing end done by the large concerns, the pharmacist doing the selling only, somewhat along the lines of the imprint goods now carried by so many stores, but with the exception that every member of the Association would push the same line and get the benefit of concerted action and advertising.

Among those who took part in the meeting were Miss Cole, Messrs. Caspari, Frames, James F. Hancock, Hynson, Lowry, McKinney, Meyers, Neal and Schultze.

Wm. J. Lowry, Jr.,
Secretary.

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PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday night, October 12th, at the Philadelphia College of Pharmacy.

The meeting was called to order at 8:30 and, there being no new or unfinished business, the program was taken up at once.

Dr. Wilson W. McNeary presented "A New Method for the Preparation of Milk of Magnesia." The paper raised considerable comment and, after a lengthy discussion, during which Prof. E. F. Cook suggested that some volatile oil should be added to milk of magnesia to make it more palatable, Prof. LaWall moved the method as given by Dr. McNeary, with Prof. Cook's suggestion, be referred to the proper sub-committee of the U. S. P. revision committee, having that work in charge. The motion was seconded and, when put to vote, carried.

Dr. Adolph W. Miller gave a very interesting and instructive account of his impression of the Pacific Coast, the California fairs and of the convention of the National Wholesale Drug Association.

After a somewhat brief discussion of the Harrison Act, the meeting adjourned.

J. Ed. Brewer,
Secretary.

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NASHVILLE.

The Nashville Branch of the American Pharmaceutical Association met in joint session with the National Drug Club in the Music Room of the Nashville Y. M. C. A., Thursday, October 21st, President D. J. Kuhn of the Nashville Drug Club presiding.

An address was delivered by State Pure Food Inspector Harry Eskew, in which he reviewed the work accomplished by his office since last July. He asked the earnest co-operation and moral support of all in the enforcement of the seven different laws for which he is responsible, and promised that everyone would be given lawful consideration.

Mr. F. W. Ward, of Memphis, representing the Board of Pharmacy, then in session here, spoke of the druggists' responsibility in the enforcement of anti-narcotic and other pharmacy laws and urged druggists to have manhood enough to report violations coming within their knowledge.

William R. White was then called on and made a plea for law enforcement, after which he read a paper entitled "Some Pharmaceutical Notes," which related some of his recent experiences in wholesale manufacturing.

A communication was read from the Secretary of the Fair Trade League advocating the passage of the Stevens Bill in Congress. A motion was passed endorsing the measure and a committee appointed to present the claims of the bill to Tennessee congressmen and senators.

A committee was also appointed to confer with members of a local medical society with reference to a resolution recently adopted by them, threatening to boycott certain druggists.

Dr. J. O. Burge then spoke of the activities of the American Pharmaceutical Association.

WILLIAM R. WHITE, Secretary.

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SAN FRANCISCO.

The San Francisco Branch of the American Pharmaceutical Association met on Tuesday evening, October 12th, 1915. In the absence of President Schneider, Vice President Jennie M. White presided. The minutes of the September meeting were read and approved.

The report of the program committee was received. The committee approved of the suggestion of Mr. England that a review of the current literature be made a regular feature of the meetings of the various branches. The members assigned the journals to be reviewed and seemed very enthusiastic in this work.

The treasurer reported a surplus in the treasury and showed that the branch was fairly prosperous.

Mrs. Harry Low read a paper on the use of iodine in surgery and called special attention to the solution in benzine which many surgeons are now using. Because of the expense of alcoholic solutions and of the discoloration of the skin benzine is desired. Benzine, likewise has its objections in its unpleasant odor and inflammability. In the discussion which followed there seemed to be a doubt whether the surgeon desires a solution of crystal iodine in benzine or 1½% of the tincture. The writer mentions the difficulty experienced in dissolving the crystal iodine in the benzine.

Writing inks were also discussed. The paper was postponed to a later date. The scarcity of drugs and chemicals and the resulting increase in prices were mentioned and this informal discussion closed a very interesting meeting.

The November meeting will be held on the ninth at 723 Pacific Building, at 8 o'clock.

CLARISSA M. ROEHR,
Secretary.

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NEW ENGLAND.

The annual meeting and election of officers of the New England Branch of the American Pharmaceutical Association was held on Wednesday evening, October 13, 1915, at the Crawford House in Boston.

The following officers were elected for the ensuing year:

President—Fred W. Archer, Milton, Mass.

Vice President—William H. Glover, Lawrence, Mass.

Secretary-Treasurer—R. Albro Newton, Southboro, Mass.

Chairman Professional Relations Committee—Frank F. Ernst, Jamaica Plain, Mass.

Chairman Membership Committee—Carlton B. Wheeler, Hudson, Mass.

After the business meeting the Branch joined the Boston Association of Retail Druggists in listening to Deputy Collector John N. O'Donahoe, who spoke on the rulings of the U. S. Treasury Department in enforcing the Harrison Act. Considerable discussion followed.

R ALBRO NEWTON,
Secretary.

CINCINNATI

The Cincinnati Branch, American Pharmaceutical Association, opened the session 1915-16 by holding its first meeting at the Metropole Hotel, Friday, October 29th, 1915. The meeting was preceded by an elaborate luncheon, which was attended by most of the Cincinnati members, as well as a number of out-of-town guests, notably Dr. J. H. Beal, Urbana, Ill.; Charles H. Avery, Chicago, Ill.; Walter Rothwell, Hatboro, Pa.; J. G. Heinritz, Holyoke, Mass., and others.

After a short business session, President Charles G. Merrell introduced the principal speaker of the evening, Dr. J. H. Beal, who in his usual happy and convincing style, gave a very interesting talk on the progress and results of the administration of the Harrison Anti-Narcotic Act, as well as the general progress of pharmacy. Dr. Beal is the author of the Beal Local Option Law of Ohio, as well as one of the framers of the Harrison Anti-Narcotic Law, and his remarks are therefore considered authentic.

The speaker said we should not be everlastingly tearing up the statutes and bothering the public with propositions for new legislation, without first enforcing the old laws. He advises that the State narcotic laws conform with the Federal laws. He speaks in favor of rational temperance and rational anti-narcotic legislation. Regarding a certain class of preparations containing narcotic drugs and alcohol, which he held were between legitimate and illegitimate medicinal preparations, he said they should not be classed with one or the other, but that the purpose of the sale should be to determine the legality of the transaction. Drug fiends, for example, would take big chances by taking cholera mixtures or corn collodion, containing Cannabis Indica, still narcotics of this class are intended to be included in the illegal list by proposed new legislation. Some go so far as to exclude any liquid containing alcohol on the presumption that alcohol may be regained by distillation and possibly be used as an alcoholic beverage. Such absurd legislation would of course affect all fluid-extracts, tinctures, essences carried by the legitimate drug trade. It is also proposed to include chloral, all the bromides and a number of other valuable drugs on the proscribed list.

The speaker advises that no legislation be advocated that interferes with the interests of the legitimate druggist or physician, and that legislators should not listen to fanatical reformers. Seek out the real criminal, condemn him, but do not condemn the whole community. Too much legislation interferes with the legitimate uses of alcohol and narcotic drugs, but rational legislation, such as the Harrison Act demands for the regulation of the sale of dangerous and habit-forming drugs, is generally advocated and commended by the druggists, and it is greatly due to the efforts of, and gives great credit to the American Pharmaceutical Association, that this law has been placed on the Statute Books of our country.

Chas. A. Apmeyer, Secretary.

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DETROIT.

The Detroit Branch of the American Pharmaceutical Association met at the Wayne County Medical Society Building, Friday evening, Oct. 15th, a good attendance being present.

The program consisted of some very interesting papers and discussions on prescription pricing. The subject was gone into very thoroughly in the papers read by Mr. Harry B. Mason, Mr. Chase and Mr. Stewart.

The general opinion seemed to favor the Evan's rule for pricing prescriptions with some exceptions, such as a well known proprietary like Maltine or a small inexpensive prescription like an eye lotion.

A. A. Wheeler, Secretary.

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CHICAGO.

The first monthly meeting of the Chicago Branch of the American Pharmaceutical Association was held Tuesday evening, October 18th with an attendance of 150 pharmacists and students of pharmacy.

The discussion of this evening centered about the Illinois State Board of Pharmacy Examinations. Leo. L. Mrazek, Frank J. Butler and Wm. J. Clancy, members of the Board of Pharmacy addressed the meeting, presenting the scope of the examinations, the nature of the questions asked and the why and wherefore of this legal testing of the knowledge of candidates for the profession of pharmacy.

Teachers and prominent pharmacists re-

plied. Among those who spoke were Professors W. B. Day, C. M. Snow A. H. Clark of the University of Illinois School of Pharmacy; Professor C. W. Patterson, of Northwestern University School of Pharmacy; Professor G. L. Secord, of Loyola University School of Pharmacy; Secretary T. H. Potts, of the National Association of Retail Druggists; Secretary I. M. Light, of the Chicago Retail Druggists Association; Secretary H. C. Christensen, of the National Association of Boards of Pharmacy and Patrick Coffey, vice-president of the Chicago Drug Clerk's Association.

Mr. Mrazek stated that of the six divisions of the examination, namely, pharmaceutical arithmetic, written materia medica, pharmacy and chemistry, the oral quiz and the prescription compounding, in his opinion the pharmaceutical arithmetic was equal in importance to the others. Of the 10 questions of this examination, two were commercial problems, two chemical problems two specific gravity or specific volume problems, two in percentage and two in alligation.

Three points were prominently presented in the discussion and tacitly endorsed by the meeting. First, the absolute need in every state of a strong, properly-conducted examination to determine the fitness of the candidate to enter pharmacy. Second, the great desirability of the pre-requisite, i. e. a thorough training in a suitable systematic course of study in a school or college of pharmacy before admission to the State Board examination. Third, the importance of adequate preliminary education before admission to the school of pharmacy. Mr. Christensen stated that the only safety for the profession of pharmacy lies in raising the standard of pharmaceutical education. He earnestly desired and expected that by 1920 the colleges of pharmacy would require a high school education for admission to their classes and that boards of pharmacy would require college graduation for admission to their examinations.

The Illinois Board of Pharmacy Examinations were as a rule highly commended. The scope of their examinations has been adopted by many others states. Criticism was made against the type of question that is not directly applicable to the U. S. P. or N. F. That is, questions in botany and plant histology should test the candidates knowledge of the botanical and histological terms used in U. S. P. or N. F. The same holds true for questions in theoretical and analytical chemistry and theoretical pharmacy.

E. N. GATHERCOAL, Secretary.

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PITTSBURGH.

The initial meeting of the Pittsburgh Branch of the American Pharmaceutical Association for the season of 1915-16 was held at the College of Pharmacy, Friday, October 15th at 8 p. m. The programme as announced was "Proposed Wood Alcohol Legislation." The discussion to be opened by Dr. Louis Emanuel.

The opening pronouncement made by Dr. Emanuel was that under the Poison Law of Pennsylvania wood alcohol is not a poison according to the definition set down therein. Physiologically ethyl alcohol, as well as methyl alcohol, are considered to have toxic properties; of the two, the latter is regarded as the most potent, it is regarded as so potent that legislation for a proper regulation of its sale seems desirable.

Referring to action taken at the 1915 meeting of the A. Ph. A. on this subject a certain type of label was recommended for general adoption for wood alcohol containers, a portion of the wording being, "It is unlawful to use this fluid in any article of food, beverage or medicinal or toilet preparation, intended for internal or external use." Now, said Dr. Emanuel, this label looks all right, but it is not truthful, in the statement that its use is unlawful in toilet preparations, at least in Pennsylvania, for the reason that this State has no law on the subject. The Pennsylvania Food Act of 1909 prohibits the use of "Alcohol or any other ingredient deleterious to health" in any food, or article that is used in the preparation of any food. It considers food to include beverages, hence so far wood alcohol is tabooed, but not so in toilet preparations.

Dr. Blumenschein said he had interviewed the coroner on the subject who said there had never been a case of wood alcohol poisoning brought to the attention of his office during his incumbency covering a number of years.

Dr. Darbaker said the use of wood alcohol in hat making industry is common and many workmen have become blind from its effects. He presented an article on the subject contained in a magazine in which one hundred cases were cited of deaths and blindness.

Dr. Blumenschein said there are a number of States in which no record is kept, hence the number of deaths as officially reported could have but little bearing as a whole.

Dr. Saalbach cited personal experience with a refined wood alcohol, the label upon which claimed it to be non-poisonous and commended its use in the preparation of external remedies such as tincture of iodine, etc. Later this misstatement having been called to the attention of the manufacturers, the wording of the label was changed.

The ordinance effective in New York City was commended and on motion of Dr. Julius A. Koch the Branch adopted a resolution advising that an effort be made to have legislation in accord therewith adopted generally.

Dr. Wurdach exhibited by blackboard illustration a method in use by him in the postgraduate course of the Pittsburgh College of Pharmacy for producing methyl alcohol which proved a very interesting and instructive demonstration.

B. E. PRITCHARD, Secretary.

The Pharmacist and the Law

RULING UNDER HARRISON LAW SUSPENDED.

The ruling contained in the first paragraph of Treasury Decision No. 2244, requiring the quantity of narcotic drug to the ounce or if in tablet form, the total number of tablets, and the quantity in grains per tablet to be indicated on the official narcotic order forms, is hereby suspended until January 1, 1916, in order to give manufacturers, dealers and other persons who make use of these order forms, an opportunity to adjust themselves to the changed conditions necessitated by the treasury decision referred to.

The second paragraph of Treasury Decision No. 2244, relating to the signing of narcotic order forms, is not suspended.

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NEW YORK WHOLESALE DRUGGISTS TO OBSERVE N. Y. HEALTH BOARD'S FORMULA DISCLOSURE ORDINANCE.

Eleven New York drug jobbers go on record as willing to comply with the ordinance forbidding handling of proprietary medicines unless registered with Health Department—Also indorse federal legislation of similar character.

Seemingly reconciled to the idea that legislation of a national as well as of a local character, to compel the disclosure of qualitative formulas and the registration of all proprietary medicines is close at hand, several leading representatives of the wholesale drug trade of New York City have placed themselves on record, in a letter to the Commissioner of Health, as favoring a federal enactment regulating the sale of such goods, in addition to signifying their intention of complying with the local Health Board's ordinance on this subject.

This action on the part of some of the wholesale drug houses in New York City, whereby they have pledged themselves to observe the provisions of Section 117 of the local Sanitary Code, which becomes effective December 31, without interposing any objection to their enforcement, follows closely upon a similar submission to this local ordinance on the part of the New York Pharmaceutical Conference, representing the retail druggists of New York City.

It had been expected that considerable opposition to the enforcement of this ordinance, which was adopted by the local Health Board to assist the local health commissioner in his campaign against "nostrums," would be manifested by the wholesale and retail drug trades of New York City, as well as by the national organization representing the proprietors and manufacturers of "patent" or proprietary medicinal preparations. The latter organization, in fact, has already made plans for fighting this ordinance in the courts and for attempting to have it adjudicated unconstitutional. Although some of the local drug jobbers, as well as retail druggists, have been summened to appear as defendants in prosecutions begun by the local Health Department for their distribution of proprietary remedies, which the department has declared to be misbranded within the meaning of Subdivision"c" of Section 116 of the local Health Board's sanitary code, none of these jobbers now appears desirous of opposing openly the enforcement of the board's formula disclosure ordinance and, as the retail druggists' representative organization, the New York Pharmaceutical Conference, has recently asked the local health com-

missioner to keep the local druggists informed on what proprietary remedies he considers to be misbranded, in order that they may avoid handling them, it is evident that the burden of contesting the constitutionality of the ordinance now rests entirely upon the Proprietary Association of America.

The letter, in which several wholesale drug houses have signified their intention of complying with the local Health Board's proprietary medicine formula disclosure and registration ordinance, follows:

NEW YORK, Oct. 18, 1915.

DR. S. S. GOLDWATER, *Commissioner of Health.*

Dear Dr. Goldwater—The undersigned wholesale druggists and dealers in proprietary medicines have signified their intention of complying with section 117 of the ordinances of the Board of Health of New York city in regard to the selling only of registered patent and proprietary articles.

We also desire to go on record as favoring a Federal law regulating the sale of patent and proprietary articles, for the same reasons which brought about the passing of the above mentioned local ordinance. We are,

Very respectfully yours,

(Signed) BAKST BROTHERS,
BRITT, LOEFFLER & WEIL,
BRUEN, RITCHEY & CO.,
EIMER & AMEND,
HENRY KLEIN & CO.,
LEHN & FINK,
C. S. LITTELL & CO.,
MATZ & COHEN,
MCKESSON & ROBBINS,
SCHIEFFELIN & CO.,
TOBBINS & JAMES.

Supplementing their action in thus notifying the local health department of their intention to observe the formula disclosure and registration ordinance, these wholesale druggists have also drafted and are now sending to manufacturers of proprietary medicines the following circular letter:

The undersigned wholesale druggists and dealers in proprietary medicines are confronted by the necessity of having their stocks of these goods in condition to comply with the terms of section 117 of the ordinances of the Board of Health of New York city, taking effect December 31

It is our purpose to comply with the ordinance, and we ask all manufacturers to make their articles legally salable, as we decline to place ourselves in a position inviting prosecution.

We call your attention to the fact that the regulations do not require the disclosure of the complete formula and percentage composition, but merely a statement of active ingredients. As Federal legislation of a similar nature seems to be impending, compliance with these new requirements seems to be more urgent in order to make your products salable in all parts of the country.

Section 117 of the local Health Board's Sanitary Code, which was originally enacted at the close of last year, and which is to become effective at the end of this year, follows:

SEC. 117. Regulating the sale of proprietary and patent medicines.—No proprietary or patent medicine manufactured, prepared, or intended for internal use, shall be held, offered for sale, sold, or given away in the city of New York until the following requirements shall in each instance have been met.

The names of the ingredients of every such medicine shall be registered in the Department of Health in such manner as the regulations of the Board of Health may prescribe.

The expression "proprietary or patent medicine," for the purposes of this section, shall be taken to mean and include every medicine or medicinal compound manufactured, prepared or intended for internal human use, the name, composition or definition of which is not to be found in the United States Pharmacopœia or National Formulary, or which does not bear the name of each ingredient conspicuously, clearly and legibly set forth in English on the outside of each bottle, box or package in which the said medicine or medicinal compound is held, offered for sale, sold or given away.

The provisions of this section shall not, however, apply to any medicine or medicinal compound, prepared or compounded upon the written prescription of a duly licensed physician, provided that such prescription be written or issued for a specific person and not for general use, and that such medicine or medicinal compound be sold or given away to or for the use of the person for whom it shall have been prescribed and prepared or compounded; and provided also that the said

prescription shall have been filed at the establishment or place where such medicine or medicinal compound is sold or given away, in chronological order, according to the date of the receipt of such prescription at such establishment or place.

Every such prescription shall remain so filed for a period of five years.

The names of the ingredients of proprietary and patent medicines, registered in accordance with the terms of this section, and all information relating thereto or connected therewith, shall be regarded as confidential, and shall not be open to inspection by the public or any person other than the official custodian of such records in the Department of Health, such persons as may be authorized by law to inspect such records, and those duly authorized to prosecute or enforce the Federal statutes, the laws of the State of New York, both criminal and civil, and the ordinances of the city of New York, but only for the purpose of such prosecution or enforcement.

Regulations supplementing this ordinance were promulgated June 30 of this year. They modify the ordinance's general requirement that the names of the ingredients of every medicine shall be registered in the Department of Health by stating that no disclosure of the quantities of these ingredients is called for, and that only the names of the active ingredients on which therapeutic claims are based, not those of inert substances, such as flavoring or coloring agents, are to be set forth in the application for the registration of the proprietary medicines in question. These regulations however, demand a registration certificate for every patent or proprietary remedy held, offered for sale or sold or given away in New York City—and seek to compel the labeling of each package containing these goods with local registration phrase and registration certificate number.

The Proprietary Association of America has advised all its members, including the leading proprietary medicine manufacturers of this country, to ignore the provisions of this local formula disclosure ordinance and its regulations, on the ground that they are wholly unconstitutional, because they seek to deprive them of their vested property rights by attempting to compel disclosure of privately owned formulas, even though such disclosure is only partial. In particular, this association is determined to have the ordinance declared unconstitutional on the ground that it prohibits the "holding" of non-complying proprietary preparations by local wholesalers or retailers, as it contends that a merchant has a legal right to "hold" any article of commerce which he desires, regardless of whether it meets with the sale requirements of local statutes, provided that such article is not sold within the jurisdiction of such ordinances or laws.—From Oil, Paint and Drug Reporter.

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PRESCRIPTIONS AS PUBLIC RECORDS.

The right of a state to constitute druggists' files of prescriptions public records in the sense that a druggist may be compelled to produce them before a court or grand jury as an aid in the enforcement of regulations governing the sale of intoxicating liquors, was upheld by the Missouri Supreme Court in the case of State vs. Davis (18 Southwestern Reporter, 894).

Defendant was indicted for violating a statute requiring every druggist to "preserve all prescriptions compounded by him or those in his employ, numbering, dating and filing them in the order in which they are compounded," and to "produce the same in court or before any grand jury, whenever thereto lawfully required." Defendant attacked the validity of this provision on the ground that it sought to compel one to surrender private papers which might tend to incriminate him, in violation of the guaranty of the federal constitution that no person shall be required to furnish evidence against himself in a criminal case.

But the court refused to regard prescriptions as necessarily belonging to the class of private papers. Speaking of the public policy of permitting druggists to sell intoxicating liquors, the court said: "It was, therefore, deemed necessary that druggists in compounding medicines and filling prescriptions should have the right to sell liquor as a medicine. There can be no doubt that the legislature had the right to impose its own conditions in authorizing such sales. It undertook to do so by the provisions of Section 4621, which limits sales to those made under the written prescription of a regularly registered and practicing physician. * * * These prescriptions thus became the license, or jus-

tification, to the druggist for making sales, which otherwise would be unlawful. As evidence of authority to make particular sales they would constitute private papers of the druggist, but could not be regarded as evidence of crime, but rather of innocence. The chief purpose of their preservation, however, was evidently that they might be used in giving aid to courts and grand juries in their proper and lawful endeavors to control and regulate the sale of intoxicating liquors within the limits prescribed by the legislature, and, in the investigation of matters of public concern. In these respects all the prescriptions become public and not private papers, and the druggist merely their custodian.—Through Druggists' Circular.

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HARRISON LAW ORDER FORM RULING.

In a decision issued by the Commissioner of Internal Revenue, with the approval of the Secertary of the Treasurer (T. D. No. 2244), there are set forth the requirements regarding the preparation and signing of narcotic order forms, as follows:

In entering items calling for narcotic preparations and remedies on the order form issued in accordance with the provisions of section 2 of the act of December 17, 1914, the quantity of narcotic drug to the ounce must be indicated, or if ordered in tablet form, the total number of tablets and the quantity in grains per tablet should be stated.

The signing of narcotic order forms with a firm name with no other name to indicate who wrote the order, will not be permitted. The name of the principal officer of a firm, corporation, partnership or company, or the person who is granted through power of attorney authority to sign such orders, must invariably appear thereon, and druggists and dealers are cautioned against filling such orders unless these requirements are complied with. Stamps or printed signatures on order forms are not permitted, and in every instance there must be an indication of individual responsibility in the preparing and signing of these forms.

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A RECENT DECISION AFFECTING THE HARRISON LAW.

A demurrer to an indictment against a physician for not registering prescriptions of habit-forming drugs was sustained by Judge Dyer in the Federal District Court at St Louis, October 28, on the ground that the Harrison law provided no penalty in case physicians did not register such prescriptions.

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SERIOUS DEFECT FOUND IN HARRISON LAW.

According to a decision which has just been rendered by Judge Wilbur F. Booth, in the United States District Court in Minneapolis, Minn., "mere possession of opium and cocaine or their derivatives by a person other than an importer, a manufacturer, seller or compounder, does not make him liable under the provisions of the Harrison law."

This judicial finding appears to point out a serious defect in the Federal narcotic sales regulation enactment.

Judge Booth made the decision when sustaining a demurrer to an indictment against Charles E. Jeannin, who is neither a recognized handler nor dispenser of the narcotics in question, charging him with having some of these drugs in his possession. The case against Jeannin was thereupon dismissed on motion of the defense. Judge Booth's opinion stated: "The Harrison law defines certain persons who can offend under its provisions. They are those who produce, import, manufacture, compound, sell, dispense, or give away opium, coca leaves, their salts or derivatives or preparations. These persons may offend in four ways—by producing, selling, transporting or having in their possession drugs without meeting the requirements of registration. But mere possession does not constitute a violation of the act in the case of persons who are not among those classes named."

In this decision, Judge Booth has followed a precedent of the United States District Court of Montana, but Judge Booth's decision defines the scope and applicability of the law much more clearly than the Montana decision.

Federal officers who have hitherto trusted implicitly in the efficacy of the Harrison law's provisions to apprehend habitues of the narcotics in question, are greatly disgruntled at Judge Booth's decision, which United States District Attorney Alfred Jacques, in Minneapolis, contends will "give immunity, as far as the Federal government is concerned, to those 'dope fiends' who are caught with drugs in their possession."

"It means, moreover," says Mr. Jacques,

"that internal revenue officers, who suspect certain individuals, cannot arrest them and convict them merely because they are caught carrying the drugs. The government in the cases of these persons will have to prove that they have actually sold or given away the drugs to others."—Oil, Paint and Drug Reporter.

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DETERMINATION OF FREE SULPHUROUS ACID BY TITRATION.

A comparison of the methods previously employed shows that there is a discrepancy in the results obtained. Against standard sodium hydroxide, using phenolphthalein as indicator (which carries the operation to the formation of neutral sulphite), the results are higher than those obtained by titration with iodine solution. Using methyl orange as indicator, the end point of which is the formation of sodium bisulphite, the results are practically equivalent to those obtained with iodine. The discrepancy is due to the fact that methyl orange only reacts sharply to mineral acids, and is not accurate in the case of weak acids, such as sulphurous. A new method is, therefore, suggested. The sulphurous acid is oxidized to sulphuric acid by means of hydrogen peroxide, which is then determined by titration with standard alkali. The oxidation takes place completely in two minutes. The results obtained are consistent, and are just double the figures obtained by direct titration with standard sodium hydroxide, using methyl orange as indicator. A second method is also suggested. This consists in treating the sulphurous acid solution with mercuric chloride after first half neutralising it with sodium hydroxide. The following reaction takes place:

$$NaHSO_3+HgCl_2=NaSO_3HgCl+HCl.$$

The free hydrochloric acid is then titrated in the ordinary way; the presence of the double salt does not interfere with the reaction of the titrating reagent. No oxidation takes place during the progress of the reaction, as evidenced by its behavior to barium chloride solution. The results obtained by this method compare favorably with those obtained by direct titration with sodium hydroxide, using methyl orange as indicator. Thus, for instance, ten mils of sulphurous acid solution required 4.3 mils of N/10 sodium hydroxide by direct titration with methyl orange, and after treatment with mercuric chloride solution 8.6 mils were required.—A. Sander (*Chem. zeit.*, 106-107, 1,057.)

REMOVING MARKING INK STAINS

In ordinary cases, that is, where the composition of the ink is unknown, the following steps should be taken, in order:—(1) First soak in a solution of common salt, and then wash with ammonia. (2) Treat with a solution of potassium cyanide, 10 grains; iodine, 5 grains; in water, 1 fl. oz. (3) Moisten with a solution of iodine in potassium iodide, and then wash with water. (4) Treat with strong solution of zinc sulphate, and then touch with a piece of metallic zinc, or sprinkle with powdered zinc, afterwards washing. (5) Treat with solution of chlorinated lime, freshly prepared, and then with a solution of acetic or citric acid in water. (6) If the stain should happen to be one made by alizarin ink, it may be removed by treating with a solution of tartaric acid; the older the stain the more concentrated should be the solution.—*The Pharmaceutical Journal*, 1915.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

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CHANGES OF ADDRESS SINCE SEPT. 18, 1915.

SCHLUETER, R. E.
From 909 Park Ave., St. Louis, Mo.
To 511 Metropolitan Bldg., St. Louis, Mo.

CONNELL, ROY L.
From Livingston, Mont.
To residence unknown.

POLONSKY, EVEL.
From 163 Broadway, Buffalo, N. Y.
To residence unknown.

FLAKE, W. L.
From Box 64, Water Valley, Miss.
To residence unknown.

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LIST OF A. P. T. A. RESIDENCE UNKNOWN

Members will confer a favor by supplying the present address of any of the following to Treasurer H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Barnes, Arthur H., 11 Newberry St., Boston, Mass.; Bernhard, Magnus, Sergt. H. C. U. S. A., Manila, P. I.; Black, Perry N., 5165 Penn Ave., Pittsburg, Pa.; Billups, Chas. A., Jefferson Barracks, Mo.; Bost, W. D., 340 Eddy St., San Francisco, Cal.

Chapman, Thos. A., 353½ Yam Hill St., Portland, Ore.; Connell, Roy L., Livingston, Mont.; Cooney, Jos. H., 499 Columbus Ave., Boston, Mass.; Cowan, Ernest L., 82 Congress St., Rumford, Me.

Davenport, Jesse S., Ft. Bayard, N. Mex.; Delgado, Jos. V., Colon, Panama, C. A.; Dietz, Henry W., Ft. Wm. McKinley, Rizal, P. I.; Dodson, Carl M., 418 So. Washington, Enid, Okla.; Downs, Fred C., Craig, Colo.

Echols, Geo. J., 308 W. Main St., Richmond, Va.; Elliott, Geo. J., 56 10th St., Detroit, Mich.; Eves, Robt. L., 401 Broad St., Nashville, Tenn.

Fender, Walter E., Ft. Adams, R. I.; Flake, Wm. L., P. O. Box 64, Water Valley, Miss.; Fuson, Harry L., Dover, Tenn.

Hardenbrook, Burton, Post Hosp., Ft. Leavenworth, Kans.; Hoffman, Edward, 4024 5th Ave., Brooklyn, N. Y.

Kaemmerer, Wm. F., 410 S. Sixth St. Columbus, Ohio; Killingsworth, Clyde L., 32 Adams Ave., W., Detroit, Mich.; Kishon, Adolph M., Post Hosp., Ft. D. A. Russell, Wyo.

Lewis, Walter, Regt. Hosp. 25th Infantry, Texas City, Texas.

Marcus, Samuel, Ft. Mills, Corregidor, P. I.; Maynard, Heatherly, 2d Division, U. S. A., Texas City, Texas.; McDonald, John S., Lumberton, N. C.; McEnroe, Robt. L., Davao, Mindanao, P. I.

Paar, Albert R., 51 W. Frambes Ave., Columbus, Ohio; Patterson, James N., 486 Geary St., San Francisco, Cal.; Polonsky, Evel, 136 Broadway, Buffalo, N. Y.

Riley, John A., 355 W. 123rd St., N. Y.

Schulz, Emil, Flager, Wash.

Tanney, Lewis, Ft. Wm. McKinley, P. I.

Wadder, Arlie L., 2101 8th Ave. S., Nashville, Tenn.; Waitz, August H., U. S. A. Army Transport "Wright," Zambianga, P. I.; Webb, Evans Hall, 1121 9th Ave. N., Nashville, Tenn.; Whitworth, Frank E., 775 E. 2d South St., Salt Lake City, Utah.

Yeomans, Sidney C., Long Beach, Cal.; Young, Clarence C., 735 Church St., Nashville, Tenn.

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(Signed) E. G. EBERLE, Editor.

Sworn to and subscribed before me this eleventh day of October, 1915.

(Signed) J. C. PLATAS,

Notary Public in and for Dallas County, Texas.

My commission expires June 1, 1917.

<>

KAMBARA EARTH AND ITS USE AS A REAGENT FOR COD-LIVER OIL.

Kambara earth is called "acid earth" or "acid clay" in Japan, and is widely used in oil factories as the bleaching and refining agent of mineral and fatty oils. It is now stated that it has "a remarkable bleaching action on fatty oils." The earth has recently been studied (see *P. J.*, February 16, 1913, 213), but no reports on the bleaching action of the earth on fatty oils appear hitherto to have been publshed. The earth occurs in three color varieties—bluish-green, brownish orange, and light yellow. As a result of experiments with these varieties in the bleaching of fatty oils, it is shown that the color of the spent residual earth (i. e., the earth which has been used to bleach the oils) is related to the degree of oil-bleaching of the originally used earth, and the more deeply colored earth serves as a bleaching agent more effectively than the lighter-colored earth; the brownish bleached better than the greenish, so that one can easily foretell the bleaching properties of an unknown earth, and also distinguish the end point of the bleaching action. The bleaching action of the earth increases with the rise of temperature to a maximum at about 140° C., and then gradually decreases. The optimum temperature varies according to the kind of oils and fats; drying oils, fish oils, etc., were bleached generally at lower temperatures than soya bean oil. Well-bleached oils are nearly colorless; in other respects, the characters are not essentially different from those of the original oils. On account of their harmless effect on nickel catalyser they can be recommended for use as the raw materials in oil-hardening plants. Among the observations made by the author is the following:—"A color reaction on cod-liver oil.—A few grammes of the earth were mixed with cod-liver oil in a test tube and then shaken; the earth became a beautiful bluish-green color. The coloration seems due to the presence of coloring principles in the oil, and is a very characteristic one. According to my experiments, most other oils have not such a coloration, so that this coloration would seem applicable to the detection of cod-liver oil."—Seüchi Ueno (*Journ. Ind. and Eng. Chem.*, July, 1915, 596.)

AIM OF SCHOOLING.

"The aim of all schooling should be practical; that is to say, intended for some use in the scheme of modern society. Service is primarily the distinguishing basis of education—service to our fellow-man, service to the state and service so that justice may come to be a reality in man's relation to man.

"The college is accomplishing a wonderful work in building the foundations for business life, in providing the trained hand and mind to assist in constructing an honest pattern of commerce out of the warp and woof of new material; in providing the professions with new helpers and in teaching the gospel that the idler has no place in the busy haunts of men. I am a conservative and would not have the feverish industrialism of this day uproot the finer branches or deny to the classics their place in the curriculum of the college. The beauty of culture is necessary to our ideals.

"By scholar I do not mean the pale ascetic—a glow-worm who illumines with faint light some dark passage through which men seldom wind their way, or one who explores some dark attic of out-of-way knowledge and stirs the drowsy bats to startled flight; but the boy or girl, the man or woman, who is a blend of the ideal and practical, who has the saving grace of common sense, clarified by knowledge, strengthened and vitalized by learning and education. The true scholar is a doer of things, one who lives for achievement. Today it is the scholar who is seeking by experiment and patient vigil to combat the dread diseases that scourge the human family, who gives up his life, a soldier of civilization without seeking the blood of his fellow-man. It was a scholar who mapped and charted the currents about the pole; a scholar who devised the means by which our messages could be carried through the air on waves of ether from far distant points on land and sea, and it is the scholar who is teaching our unwilling farmers how to utilize every chemical element of earth and sky to grow the breadstuffs in our state that will feed the peoples of the world. When this comes about then will cotton cease to be the undisputed monarch of our fields and share its scepter and dominion with the yellow corn and the ripening grain.

"Let it be taught in every school that no government can be better or higher than the average character of its people. Let it be taught above all things that class hatred is an abomination; that there is no class in our government, but an aristocracy of intellect, a titled nobility of mind and heart; and let it be impressed that all respectable elements of society are co-ordinated in one beneficent system—the public welfare of all. Strangle the demagogue who preaches resort to the bullet or the incendiary's torch, who ridicules education and compliments ignorance, who inflames without enlightening. In the effort to correct evils—and materialism is the predominant evil of this generation—let it be known that honest wealth itself is not a crime. When wealth endows our schools and maintains our hospitals and builds our churches, when it spreads light in the dark corners of the earth, it is a benediction and not a curse."

FREDERICK J. WULLING

President-Elect, American Pharmaceutical Association



Frederick J. Wulling

For sketch see page 1488

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The Association does not accept the responsibility for the opinions of contributors. Offensive personalities must be avoided.

IAN MACLAREN tells somewhere a sweet story of his native land, that while walking leisurely along a country road during midday of a very warm day, he met a bonnie wee lass, all humped up and red, and puffing with the weight of a chubby laddie she was carrying.

"Isn't he too heavy for you?" asked the dominie.

"He's not hivvy, sir," came the answer, with a smile of loving pride, "he's ma brither!"

How well we may apply this beautiful lesson to our lives, to our Association, but we desire to utilize it for the text of our

CHRISTMAS WISH FOR YOU.

Before the next number of the Journal comes to you, another Christmas will have come and gone. It constitutes an event in the lives of all people in civilized countries, be they young or old, that is looked forward to with joy, though mingled with much sadness and sorrow in turbulent Europe, nor is there entire absence in this peaceful country of ours. When sadness and sorrow may be displaced by a kind act, both the recipient and contributor share in the intensity of the joy. No doubt, each one of our members will spread some happiness in this way, for what is Christmas unless it brings such opportunities? We hope that all will participate in such joyous occasions of well-doing, for surely nothing contributes greater pleasure, and also revives the knowledge of the brotherhood of man. Therefore, we can think of no better wish for our readers, accompanied by the expressed hope, that all may enjoy this happy season uncontaminated by sadness or misfortune of any kind.

THE NEW YEAR.

The New Year, while carrying the legacies of the old world, is ours to mold. We cannot afford to begin wrong, and a proper observance of the days that are upon us psychologically for the trials and tribulations, successes and failures of the next cycle of time—the calendar year.

We may be assured that while as pharmacists we have shared great responsibilities, larger service is expected of us in the coming years, because of greater opportunities which we cannot afford to neglect. Let us pause for awhile, take stock, get our bearings and meet the responsibilities and accept of the opportunities with a well calculated gait and in an optimistic spirit.

Section on Education and Legislation

Papers Presented at the Sixty-Third Annual Convention

MINUTES OF THE SECOND SEPARATE SESSION OF THE SECTION ON EDUCATION AND LEGISLATION.*

The second session of the Section on Education and Legislation was called to order by Chairman Freericks in the Red Room, Bellevue Hotel, San Francisco, on Thursday, August 12, 1915, at 2:15 p. m.

Professor E. L. Newcomb acted as Secretary pro tem.

Chairman Freericks: The report of the Committee on National Legislation and also the report of the National Drug Trade Conference seem to have gone to the General Session. The next order of business will be the consideration of the report of the Committee on Regulations for Transportation of Drugs by Mail of which Mr. B. L. Murray is the Chairman.

REPORT OF THE SPECIAL COMMITTEE ON REGULATIONS FOR TRANSPORTATION OF DRUGS BY MAIL.

At the annual meeting held in Detroit in August of last year, 1914, the Committee on Post Office Regulations for the Mailing of Poisons made a full report on the situation, taking up the causes of the unfortunate position in which we find ourselves and setting forth at length the laws and regulations governing or rather preventing the mailing of poisons. (See *Journal American Pharmaceutical Association,* February, 1915.) The Committee's report was heard and accepted, and the Committee itself discharged. It was evident, however, that work of this kind, to be of value, must be continuing and some weeks after the August meeting the Committee, slightly rearranged, was reappointed. It is now known as the Special Committee on Regulations for Transportation of Drugs by Mail.

The situation as depicted in our last previous report remains unchanged today, no new laws having been passed and no new regulations having been promulgated. It is still illegal to send poisons through the mails, even though they can be packaged in such way as to make them safe for all that handle them. It is a daily occurrence that small parcels containing poisons must be handled by express, and usually at greater expense, merely because we forbid ourselves the use of our parcel post. The express companies handle the packages with entire safety both as to their employes and as to the goods. In the meantime our Post Office Department in Washington instead of being allowed to increase its usefulness, is issuing statements showing millions of expense beyond its receipts.

It has been suggested by some that each individual take the subject up with his postmaster, urging an extension of the parcel post so that poisons may be handled through the mails. It might stimulate the Post Office Department to a closer consideration of the subject if it were brought to the attention of the Department constantly by the postmasters themselves. If it were taken up on the basis of an extension of the parcel post as well as a needed added facility in the drug business it would perhaps be of value.

*Papers read before the Sections will be accompanied by the discussions and are therefore omitted from the minutes.

Your Chairman, who is writing this report because he feels it is only a report of progress, expresses the view of the Committee as shown by correspondence that two fields are open to us, and both must be cultivated. First, we must continue to voice our disapproval of present conditions, as we do from time to time, and second, exert our influence to secure the passage of a national poison law especially drawn to regulate interstate commerce in poisons. Handling poisons in the mails will naturally follow the enactment of such a law.

The Committee has made a study of the above two fields of operation during the year and has noted with interest the attention that other bodies also are giving to the subject. It is therefore suggested that the work of the Committee be carried on through the coming year or years, recognizing at once that the work is likely to be lengthy. The Chairman would be glad to suggest one or two more names to add to the membership of the Committee.

Respectfully submitted,

B. L. MURRAY, Chairman.

Chairman Freericks: You have heard the report of the Committee, what is your pleasure?

It was moved by W. C. Anderson, and seconded by Dr. Otto F. Claus, that the report be received and that it take the usual course.

Chairman Freericks: Are there any remarks? The Chairman of the Committee suggests one or two other names for increasing the membership of the Committee. Do you desire to take that into consideration at this time or shall we simply receive the report and let it take its usual course?

Dr. W. C. Anderson: I wish to ask how the number of members of that Committee is provided for?

Chairman Freericks: The Committee was appointed originally by this Section two years ago. It is a Committee of this Section, and as I understand it, the number of the Committee may be increased.

The motion having been regularly made and duly seconded, it was declared carried, after voting thereon.

Chairman Freericks: Now, is there any desire to act upon this recommendation?

Dr. W. C. Anderson: I move that the request of the Chairman of this Committee be complied with and that the Committee be increased by the addition of two extra members.

(Seconded by Dr. Otto F. Claus.)

Mr. R. F. Troxler: I would like to amend Dr. Anderson's motion and offer a substitute.

The Chairman intimates that he would like to suggest the names of the two additional members. I move that he be invited to suggest them and that he appoint them on the Committee. Is that agreeable?

Dr. W. C. Anderson: I will accept that.

Chairman Freericks: The amendment, as proposed by Dr. Troxler, is accepted by the mover of the original motion and his second.

The motion carried.

Chairman Freericks: The next order of business is the report of the Committee on Survey of the Pharmaceutical Teaching Institutions, by Mr. Hugh Craig, Chairman.

The Chair would accept the opportunity of saying that this is a most impor-

tant work. The report is the first one made by the Committee, and since the task undertaken is an enormous one, you must look to the fact that it is only the beginning of the work, but I believe you will find it of great interest. Miss Cooper has kindly consented to read this report.

REPORT OF COMMITTEE ON THE SURVEY OF TEACHING INSTITUTIONS.

Your Committee's report will be one of progress and suggestion. The progress has not been very marked because the Committee was not appointed until early in the year 1915 (through no fault of the honorable Chairman of the Section); and because none but very busy members could be secured to act on this Committee—a common condition—and also because the Committee was quite without instruction as to the scope of its purpose.

Your Committe has hesitated to essay the work which, doubtless, was intended for it, that is, a classification of the pharmacal teaching institutions of the country, because it had no basis for such a classification and did not feel empowered to define a basis and operate thereupon without first submitting the scheme of classification to the creating body for approval. Your Committee, therefore, takes this occasion to *recommend that this Section prepare a classification of the teaching institutions giving personal instruction in pharmacology, and for pharmacal ends, in the allied subjects embraced within the examinations by boards of registration in pharmacy, on the following bases*:

a—Degrees conferred.
b—Actual entrance requirements.
c—Length of courses.
d—Scope of courses.
e—Obligations as to attendance.
f—Passing grades.
g—Number and qualifications of members of faculty.
h—Value of property, real and chattel, owned by institution.
i—Affiliation with a university or other educational group.
j—Ratio of fees to operating expenses.

Your Committee feels that this Section may well interest itself in the several matters embraced in the foregoing list of bases for classification and that it can do a great deal to bring about uniformity, at least in, say, three, general classes, of teaching institutions, and assist materially in eradicating the evils which are commonly complained of in connection with the practices of teaching institutions in these regards.

With regard to bases a, b, c, and d, your Committee feels that the path blazed by the American Conference of Pharmaceutical Faculties should be followed, but that some further endeavor should be made to assure a proper rating of qualifications in preliminary education, other than that obtained in a high-school, in other words, of the so-called "equivalent." This "equivalent" should be based upon subjects which are of practical value to the future chemist, and the required counts or units should cover not less than five subjects, three of which should be: English, mathematics and physics.

Your Committee recognizes the delicacy of any attempt to standardize teaching faculties, but it believes such a step to be an important one and a necessary one. In the first place, those who set themselves up as teachers should know, not only what they are teaching, but as well how to impart knowledge. It would be well if they were required to have some training in pedagogic practice. On the other hand, the efforts of a teacher, without actual practical experience in the operation of a drug store, to instruct students in the commercial phases of pharmacal practice are quite likely to prove as disastrous in the future life of the student as have been many of the purely theoretical ideas of the so-called "efficiency experts." Very little of the very necessary psychology of selling can

be learned from books, the salaries of advertising experts notwithstanding. Of course, a retail druggist, with the druggist's usual lack of familiarity with accounting, is an equally poor teacher. And commercial training is the one most needed qualification in the retail drug business today, because the commercially trained young man will recognize the folly of setting up in business with more mortgage than capital in his investment, and much debauching of pharmacy and unfair competition will be obviated.

A question that calls for careful consideration in the standardizing of teaching faculties is the effect of recruiting the faculty from among students of the institution. Few, if any, teachers can impart their full knowledge of a subject to a student; and to hand down from teacher to student the task of instruction in any one subject is to court the detrimental effects of what may be styled inbreeding.

Another fault, somewhat of a similar relation, is that of manufacturing a faculty by conferring higher degrees upon complacent, yes, eager, prospective or acting teachers. This practice is widely at odds with educational ethics and should be frowned upon by this Association.

So much for comment upon the Committee's suggestions for a scheme of classification. It is, of course, not the idea of the Committee that the rankings on the several bases, suggested above, are to be cumulated to indicate the school of the highest grade. Some of the bases are closely related and may be cumulated quite properly; but others are more informative than essential in this regard.

It is the belief of your Committee that this Section should take cognizance of other phases of pharmacal education than that of the school giving personal instruction. There are a number of correspondence schools in pharmacy, some of which, to the personal knowledge of members of the Committee, are so lax in their methods of gauging the progress of their students as to give very high rankings to students who have answered the questions apparently with an open book before them, because, separated from the informative volume, they are totally at a loss for an answer to the simplest questions. It is quite properly the duty of this Section to make it possible for prospective students to get the correct appreciation of the value of a correspondence course. If this Association fails to point out clearly the difference between knowledge and instruction, it does not serve the purpose for which it stands in the general pharmacal opinion.

In several cities the Young Men's Christian Association conducts classes in pharmacy, and the practice is spreading. The instruction given in these classes compares favorably with that given in the minor schools of pharmacy. As long as there is no general adoption of graduation from a standardized school of pharmacy as a prerequisite for examination by a board of pharmacy, this Section should pay as much attention to the supply of properly qualified pharmacists, from whatsoever source, as to the supply of teaching institutions of a certain standard: it should interest itself in every means of educating the pharmacal novice. That interest on the part of this Section in the Y. M. C. A. work will be welcomed is indicated by the following quotation from a letter received by the Chairman of your Committee from Mr. George B. Hodge, the Secretary for the educational department of the International Committee of Young Men's Christian Associations:

"We shall be glad for your helpful suggestion with reference to any step we may take or ought to take, that such courses may be strengthened, improved, and in keeping with the standards of your general association."

Of particular interest to those who have any concern for the education of the pharmacist has been the action of the educational authorities in several cities, Cincinnati and Chicago being prominent examples, in coöperating with local pharmacal organizations to provide part-time instruction in the high-schools for apprentices in drug stores, the purpose being the commendable one of affording an opportunity for the apprentice to acquire the preliminary educational qualifications required by the better colleges of pharmacy, and very necessary for the

welfare of pharmacy. By a proper correlation of the apprentice's work and study in the store—it is to be hoped that the old apprentice system has not been so far neglected as to make the boy's service all work and no study,and with the instruction given in the high-school, this plan will do more than anything else to provide educated and able pharmacists. It should, therefore, have the heartiest approval of this Section, and the members of this Association should urge its adoption in every community and lend every assistance in the laying-out of a scheme of instruction, properly correlating the instruction given in the school and that given by the preceptor. *Your Committee recommends that this Section take steps toward the adoption of a scheme or curriculum for correlated instruction of this sort.*

The growing importance of the trained sanitation officer to every community is sufficient reason for this Section to interest itself in the education of persons to fill these offices. Something more than a chemist and bacteriologist is needed, *and your Committee would recommend that this Section urge pharmacal schools, which are so affiliated or located as to be able to do so, and the Young Men's Christian Association to establish a course in connection with a technical school or class, which will qualify students as sanitation officers and to confer upon them a certificate or diploma of public health.*

The field, in which your Committee has done such a little preliminary scratching of the top soil, is one well worthy of the most careful attention of this Section and of the general Association. Your Committee, therefore, recommends *that the work begun by it be carried forward,* and requests a careful and thorough consideration of its suggestions, so that those, into whose hands may be entrusted the real work of surveying and improving this important field, may be able to go about the performance of their task in a thoroughgoing manner. There are many contingencies to be met, many disasters to be avoided, and many pitfalls to be escaped in the proper performance of this task; but the results are so important to the future of pharmacy that the work should be put forward with diligence and dispatch.

Appended is a list of one hundred and fourteen institutions of various sorts, which are engaged in offering some variety of instruction in pharmacy. This list is not offered as being complete, because it is not possible to get information about every tutorshop and plugging school. Much assistance was given to your Committee in the compilation of this list by Prof. J. A. Koch, the Chairman of the Executive Committee of the American Conference of Pharmaceutical Faculties, and by the secretaries of a number of the state boards of pharmacy, and to these we desire to express our appreciation and gratitude. For obvious reasons we have omitted from this list the schools in Canada, Cuba, Porto Rico, and the Philippines, believing the field afforded by the continental portion of the United States, sufficiently extensive for the original purpose of the work of survey.

Respectfully submitted,

J. H. BEAL,
H. C. CHRISTENSEN,
HUGH CRAIG, Chairman.

ALABAMA:—Alabama Polytechnic Institute, Auburn. Birmingham Medical College and College of Pharmacy, Birmingham. University of Alabama, Department of Pharmacy, Birmingham.

ARKANSAS:—College of Physicians and Surgeons, Little Rock.

CALIFORNIA:—California College of Pharmacy, San Francisco. College of Physicians and Surgeons, Department of Pharmacy, San Francisco. University of Southern California, Department of Pharmacy, Los Angeles.

CONNECTICUT:—Y. M. C. A. School of Pharmacy, Hartford.

DISTRICT OF COLUMBIA:—Howard University, Department of Pharmacy, Washington. National College of Pharmacy, Washington

FLORIDA:—Florida College of Pharmacy, Jacksonville.

GEORGIA:—Atlanta College of Pharmacy, Atlanta. Mercer University, Department of Pharmacy, Macon. Southern College of Pharmacy, Atlanta. University of Georgia, Department of Pharmacy, Athens.

ILLINOIS:—Central States College of Pharmacy (Loyola University), Chicago. Northwestern University, School of Pharmacy, Chicago. University of Illinois, School of Pharmacy, Chicago.

INDIANA:—Prof. Green's School of Pharmacy, Indianapolis. Indianapolis (Winona) College of Pharmacy, Indianapolis. Notre Dame University, Department of Pharmacy, Notre Dame. Purdue University, School of Pharmacy, Indianapolis. Tristate Normal School, Department of Pharmacy, Angola. Valparaiso University, School of Pharmacy, Valparaiso.

IOWA:—Babcock Institute of Pharmacy, Des Moines. Drake University, College of Pharmacy, Des Moines. Highland Park College of Pharmacy, Des Moines. Keokuk College of Pharmacy, Keokuk. University of Iowa, Department of Pharmacy, Iowa City. Western Pharma-Technic Institute, Council Bluffs.

KANSAS:—University of Kansas, Department of Pharmacy, Lawrence. Wuester School of Instruction in Pharmacy, Wichita.

KENTUCKY:—Louisville College of Pharmacy, Louisville.

LOUISIANA:—New Orleans College of Pharmacy (Loyola University), New Orleans. Tulane University, Medical School, New Orleans.

MAINE:—University of Maine, College of Pharmacy, Orono.

MARYLAND:—Artel's School of Pharmacy, Baltimore. Maryland College of Pharmacy (University of Maryland), Baltimore. Milton University, Baltimore.

MASSACHUSETTS:—Massachusetts College of Pharmacy, Boston. Dr. Patrick's School of Pharmacy, Boston.

MICHIGAN:—Detroit College of Medicine, Department of Pharmacy, Detroit. Detroit Technical Institute (Y. M. C. A.), Department of Pharmacy and Chemistry, Detroit. Ferris Institute, Department of Pharmacy, Big Rapids. University of Michigan, School of Pharmacy, Ann Arbor. Warner School of Pharmacy, Sandusky.

MINNESOTA:—Minnesota Institute of Pharmacy, Minneapolis. Smith (F. U.) School of Pharmacy, St. Paul. University of Minnesota, School of Pharmacy, Minneapolis.

MISSISSIPPI:—University of Mississippi, School of Pharmacy, University.

MISSOURI:—Barnes College of Pharmacy (National University of Art and Science), St. Louis. Bates College of Pharmacy, St. Louis. Bowen School of Pharmacy, Brunswick. Kansas City College of Pharmacy, Kansas City. St. Louis College of Pharmacy, St. Louis. Whitney School of Pharmacy, Kansas City.

MONTANA:—University of Montana, School of Pharmacy, Missoula.

NEBRASKA:—Creighton University, Department of Pharmacy, Omaha. Fremont Normal College, School of Pharmacy, Fremont. Omaha College of Pharmacy, Omaha. University of Nebraska, School of Pharmacy, Lincoln.

NEW JERSEY:—College of Jersey City, Department of Pharmacy, Jersey City. New Jersey College of Pharmacy, Newark.

NEW YORK:—Albany College of Pharmacy, Albany. Brooklyn College of Pharmacy, Brooklyn. College of Pharmacy of the City of New York, Columbia University, New York. Fordham University, School of Pharmacy, New York. University of Buffalo, College of Pharmacy, Buffalo.

NORTH CAROLINA:—Leonard Schools of Pharmacy and Medicine, Raleigh. University of North Carolina, Department of Pharmacy, Chapel Hill.

NORTH DAKOTA:—North Dakota Agricultural College, Department of Pharmacy, Fargo.

OHIO:—Cincinnati College of Pharmacy, Cincinnati. Cleveland College of Pharmacy, Cleveland. Ohio Northern University, Department of Pharmacy, Ada. Queen City College of Pharmacy, Cincinnati. Toledo University, School of Pharmacy, Toledo. Ohio State University, Department of Pharmacy, Columbus.

OKLAHOMA:—Epworth University, Department of Pharmacy, Oklahoma City. Northwestern State Normal School, Department of Pharmacy, Alva. University of Oklahoma, School of Pharmacy, Norman.

OREGON:—North Pacific College of Pharmacy, Portland. Oregon Agricultural College, Department of Pharmacy, Corvallis. Y. M. C. A. College of Pharmacy, Portland.

PENNSYLVANIA:—Medico- Chirurgical College, Department of Pharmacy, Philadelphia. Philadelphia College of Pharmacy, Philadelphia. Pittsburgh College of Pharmacy, Pittsburgh. Temple College of Pharmacy, Philadelphia.

RHODE ISLAND:—Rhode Island College of Pharmacy and Allied Sciences, Providence. Washington Park College of Pharmacy, Providence.

SOUTH CAROLINA:—Medical College of the State of South Carolina, Department of Pharmacy, Charleston.

SOUTH DAKOTA:—Dakota Normal College, Department of Pharmacy, Sioux Falls. South Dakota Agricultural College, Department of Pharmacy, Brookings.

TENNESSEE:—Chattanooga Medical College, Department of Pharmacy, Chattanooga. Meharry Pharmaceutical College, Nashville. University of the South, College of Pharmany, Sewanee. University of Tennessee, Department of Pharmacy, Knoxville. Vanderbilt University, Department of Pharmacy, Nashville.

TEXAS:—Baylor University, College of Pharmacy, Dallas. Department of Pharmacy, University of Texas, Galveston.

VIRGINIA:—Medical College of Virginia, School of Pharmacy, Richmond. University College of Medicine, Department of Pharmacy, Richmond. Virginia School of Pharmacy, Richmond.

WASHINGTON:—University of Washington, School of Pharmacy, Seattle. Washington Agricultural College, School of Pharmacy, Pullman.

WEST VIRGINIA:—West Virginia University, Department of Pharmacy, Morgantown.

WISCONSIN:—Marquette University, Department of Pharmacy, Milwaukee. University of Wisconsin, Department of Pharmacy, Madison. Wisconsin Medical College, Department of Pharmacy, Milwaukee.

Chairman Freericks: You have heard this most interesting report of the Committee, and I would like to ask now what is your pleasure with reference to it?

Dr. W. C. Anderson: I move, Mr. Chairman, that the report be received and referred to the Committee on Publication, with the recommendation of the Section that the Committee be continued or that this work be continued, at least, and the report of the Committee be approved. Seconded by Mr. Binz.

A Member: I notice that the report refers to giving degrees. I do not know just exactly how it was expressed, anyway, that we were not competent to fill the position that the degree placed the student in. While it is true, I think, that several of our members did not have the opportunity to go to college years and years ago, yet they have done good work for the Association, and for pharmacy. It is very nice to honor them by a degree, even though their teaching may not be high enough to warrant it. I believe it is a deserved honor, and I believe in honoring people while they are alive and not waiting until they are dead.

The motion of Dr. Anderson was called for, and carried by vote.

Chairman Freericks: We will now have the report of the Committee on Patents and Trade-marks. This report will be read by Mr. England.

Before the reading of the report, Mr. England stated that the Chairman of the Committee is Dr. F. E. Stewart, who, unfortunately, is not able to be present, and had asked him to read the report.

REPORT OF THE COMMITTEE ON PATENTS AND TRADE-MARKS.

Owing to the shortage in supplies of imported chemicals, caused by war conditions in Europe, and the hinderance to plans for manufacturing them in the United States because of patent grants made to foreign inventors, who are not

manufacturing them in this country, the question of patents and trademarks has occupied considerable prominence during the past year.

The Chairman of your Committee, as your representative and as a representative of similar committees of the Pennsylvania State Pharmaceutical Association, and of the Philadelphia Merchants' and Manufacturers' Association, attended the hearing at Washington before the House Committee on Patents in relation to the Paige Bill, in company with Mr. Samuel C. Henry, President of the National Association of Retail Druggists, and Mr. Jacob H. Rehfuss, Chairman of the Legislative Committee of said association. The Paige Bill and the hearing[1] referred to are of so much importance to pharmacy that your Committee is presenting both documents as part of its report.

You will note that your Chairman filed a brief with the House Committee on Patents, which appears in the official report of the hearing. This brief consists of Preambles and Resolutions constituting his report as Chairman of the Committee on Patent Law Revision of the Merchants' and Manufacturers' Association, and includes a proposed revision of certain sections of the copyright, patent and trademark laws, which bear upon the chemical industries and the materia medica supply business.

The proposed revision was undertaken by your Chairman in response to the request of Dr. S. Solis-Cohen, Chairman of the Committee on Scope of the Committee having charge of the revision of the United States Pharmacopœia.

The salient features of the proposed revision consist in certain additions to and modifications of the laws, as follows:

1—Modification of the patent law to prevent aliens from obtaining patents for their invention in the United States except in case they manufacture them in this country, within a stated period of years dating from the issue of United States patents.

2—Adoption of a provision in the U. S. Patent Law, similar to a provision contained in the German Patent Law, and also contained in the Patent Laws of most foreign countries, which limits patents related to new chemical and food products to processes and apparatus for manufacture, and requiring inventors of alleged improvements to prove them to be such before placing the same on the market in competition with the inventions of original patentees.

3—Addition of a section to the copyright, patent and trademark laws, respectively, definitely stating the fact that names of new articles of commerce are neither copyrightable or patentable.

4—Addition of a section to the patent and trademark laws requiring applicants for patents or trademark registration, to give the name of the article for which patent is asked or trademark registration requested, said name to appear afterward as the principal title on all labels and advertisements of said article, when placed on the market.

The following exception to our position in relation to so-called trade names has been filed with your Committee:

"When a patent was granted by the United States to the inventor of acetphenetidin this gave an absolute monopoly to the manufacture and sale of said article for a limited time. When that time expired everybody secured the right to manufacture and sell said article, and a monopoly in the manufacture and sale ceased altogether. Now you would hold it to be wrong that the patentee for said article adopted the coined name phenacetin and made acetphenetidin generally known by such coined name, so that those who buy and use the article are accustomed to call for it as phenacetine. There was absolutely nothing which prevented the professions and the public from becoming accustomed to call for said article by the name acetphenetidin, and the original patentee or those holding his rights could in no manner complain, if the patented article was generally called for by such name and then upon expiration of the patent everybody being accustomed to call for it by such true descriptive name, the advantage of the original patentee would entirely cease with the expiration of the patent.

"Now because the professions and the public are indifferent to the use of a correct de-

[1]This is too lengthy for printing in the Journal. Those who desire a copy can secure one by addressing the Committee on Patents, House of Representatives. The date of the Bulletin is January 28, 1915.

scriptive name or because they are too lazy to use it you complain and condemn the patentee for having acquainted the public with a name coined by him, which results in securing to the original introducer the acetphenetidin manufactured by the original patentee. It is right at this point where our views differ. I am inclined to believe that you would object quite as much if the patentee had advertised his article as Jones' acetphentidin, and had been able to have the public always call for Jones' acetphenetidin instead of simply acetphenetidin. Of course, you will agree that no one in justice could object if through extensive advertising the patentee had induced the public and the professions to invariably designate his article as 'Jones' acetphenetidin,' and thus secure advantages in the continued demand for the article after the expiration of the patent, but because he has decided upon a coined name to mean exactly the same thing as Jones' acephenetidin, you believe that his conduct is much to be condemned.

"After all in this connection it is merely a question of degree. It is understood, that the public will far more readily take to a coined name, but fundamentally there is no difference, and if the patentee might succeed in having the name of the article invariably used in connection with *his own* name, then as stated the result would be the same and there ought not to be an objection on any ground."

No one disputes that the manufacturer of a new product, who places it on the market, and succeeds in creating a demand for it, by honest advertising, has a right to all of the business he can obtain in this manner, provided, of course, the product itself can safely be used by the public, without injury to health or morals. No one disputes that the use of a distinctive mark, word, or trade name to designate and distinguish his brand from all other brands of the same article, and the creating of a demand by advertising the article under a brand name, are both legitimate and may be advisable from a commercial standpoint.

It is, therefore, important that the trade name should be properly used, otherwise, in case of a lawsuit, the manufacturer may find himself without the protection of the courts. The method of using the trade name described by our objector, is not the proper manner, as the following facts will clearly show:

It is evident that the object in view on the part of those manufacturers of materia medica products who patent their alleged inventions under chemical names, and market them under coined names, is to obtain monopolistic control of the products so marked, after the patents expire, and thus defeat the object of the patent law, which is to grant inventors the right to prevent others copying their inventions for limited times, after which their manufacture is required to be open to competition on equal terms with the patentee.

The coined name, when used in this manner, becomes, by such use, descriptive of the article itself, and it is an axiom of law that a descriptive name cannot be a trademark. Used in this manner the name ceases to be a trademark, even though it may have been registered as such and becomes a synonym and as such can be used by any manufacturer in labeling the same product. This is well illustrated in the case of saccharin, the chemical name of which is benzoylsulphonic imide. By persistent advertising the word saccharin was forced into the language as a noun and became known to the public as an appellative. When the patent expired benzoylsulphonic imide became public property, together with the name saccharin. Now it is listed in Merck's Index as "Saccharin Merck," and under that name appears its chemical name benzoylsulphonic imide, and also all of the so-called trade names, such as "Garantose," "Glusidum," etc. It is manifest that when Merck & Co. received an order for benzoylsulphonic imide under any one of these so-called trade names, they would feel free to supply it under the name Saccharin Merck.

Is this action of Merck & Co. in harmony with the object of the patent law? Let us analyze the question.

Benzoylsulphonic imide is a definite chemical substance which, if properly made, corresponds to the same tests for identity and purity no matter which manufacturer produces it. It first appeared on the market as "Saccharin." The name "Saccharin" was claimed by the commercial introducer as a trademark or trade name. Its sale was inhibited by patent protection. These restrictions have been removed by the expiration of patent. In accordance with the decision

of the Supreme Court of the United States in the Singer Sewing Machine Case,* the product is now open for competition under the name saccharin, as well as under the name benzoylsulphonic imide. No one will question the right of Merck & Co. to treat the names "benzoylsulphonic imide" and "saccharin" as synonyms. The question, therefore, resolves itself into this, namely, is it not a proper proceeding on the part of Merck & Co. to treat all other trade names as synonyms also? The product is open for competition. No one has the right to control the name saccharin. Why should any one have the right to control any other name by which the product is known? Why should Merck & Co. place themselves in a disadvantageous position commercially by recognizing proprietary claims on the part of competing houses? When the patent inhibiting the sale of the product expired Merck & Co. were forced to relinquish all proprietary claims to the name "Saccharin." Why, then, should they recognize proprietary claims to other "trade names" for the product on the part of their competitors?

The question arises in each case, is the name claimed by the manufacturer as a trademark, a trademark in fact, or merely another name for the same thing, and therefore, a synonym? This question can usually be answered without difficulty by asking another question, namely, is the name claimed as a trademark *used* by the manufacturer for the purpose of distiguishing his *brand* of the article from other brands of the same article, or is it used to give the medical profession or the public the impression that the article sold under the name is in its physiological properties and therapeutic effects different from other articles used for the same purposes? If it is a different article it is perfectly proper to give it a different name, in which case the name given it becomes public property, and all who deal in the article (and all have a right to deal in it unless restrained by patent) have a right to designate it by the name by which it is recognizable.

Names cannot be copyrighted or patented, or owned by anybody, no matter whether they are coined names or not. Every word in the language was coined by somebody and if the act of invention creates a right to the ownership of a word or a name, the entire common language in fact now belongs by right to the inventors and every time we speak or write a word or use a name, we are guilty of infringing the "vested rights" of somebody.

Armed by these facts, let us return to the objections urged by the gentleman who takes exception to our position regarding "trade names."

Our objector uses as a foundation for his argument the assumption that "Jones," having a right to the exclusive use of his own name, Jones, has also the right to designate the acetphenetidin made by him as Jones' acetphenetidin, and, therefore, the right to substitute for his own name (Jones) another name as a designating or specifying word-mark, i. e., phenacetine. This argument seems plausible, but it is unsound. Singer probably had the same idea in mind when he

*DECISION OF SUPREME COURT OF THE U. S. IN THE SINGER SEWING MACHINE CASE.—The result then of the American, the English and the French doctrine universally upheld is this, that where, during the life of a monopoly created by a patent a name, whether it be arbitrary or be that of the inventor, has become, by his consent, either express or tacit, the identifying and generic name of the thing patented, this name passes to the public with the cessation of the monopoly which the patent created. When another avails himself of this public dedication to make the machine and use the generic designation, he can do so in all forms, with the fullest liberty, by affixing such name to the machines, by referring to it in advertisements and by other means, subject, however, to the condition that the name must be so used, as not to deprive others of their rights or to deceive the public, and therefore that the name must be accompanied with such indication that the thing manufactured is the work of the one making it, as will unmistakably inform the public of the fact."

It has been decided by the courts again and again that

"When an article is made that was theretofore unknown, it must be christened with a name, by which it can be recognized and dealt in, and the name thus given it, becomes public property, and all who deal in the article have a right to designate it by the name by which it is recognizable." (Lelanche Battery Co., 23 Fed. Report, 227.)

called his machine the "Singer Sewing Machine." The function of a trademark is to point out the manufacturer, or, in other words, to point out the *brand.* When a manufacturer permits his own name to become part of the name of an article it is no longer capable of pointing out brands of such article. It has become by the act of the manufacturer part of the common language and, therefore, public property.

We have many familiar examples of a person's name becoming a mere indication of a certain article or class of goods. Wellington, Brougham, Stanhope, Manton and Dover, are personal names that have given us the "Wellington boots" the "Brougham" or the "Stanhope" carriage, the "Blucher" boots, the "Manton" fowling piece, and "Dover's" powder.

The fact that a man may lose the exclusive use of his own name in connection with the manufacture and sale of an article of commerce has been decided by the courts so many times that no one versed in law would attempt to contest it. The Singer Sewing Machine case is by no means the only instance, as reference to the law libraries will show.

If our position on this subject is sound it logically follows that the names "phenacetine," "salol," "aspirin," "lanolin," and hundreds of other names appearing in medical literature and claimed as trademarks by the manufacturers, are not trademarks in fact, but appellatives and therefore public property. The Supreme Court in its Singer Sewing Machine case decision* points out the fact that when a name has become by the consent of the manufacturer, either express or tacit, the identifying and generic name of the thing patented, this name passes to the public with the cessation of the monoply created by the patent. The manufacturers of these products have never protested against the use of their so-called trade names by the medical profession and the public as appellatives. On the contrary, they have not left a stone unturned to force their names into scientific literature as appellatives for the purpose of converting the educational machinery of medicine and pharmacy,—colleges, text books, medical and pharmaceutical periodicals—into a great advertising bureau for commercial exploitation and free advertising. Certainly by their consent these names have become public property if the decision of the United States Supreme Court referred to means anything.

What we want to protect is not monopoly in the manufacture and sale of *products.* What we want to protect is property in *brands.* We believe that when a new chemical product is invented or discovered, the real invention or discovery is in the *way of making it,* rather than in the product itself. The science of chemistry has determined before hand that the union of certain elements in certain proportions will result in the production of certain substance, the exact composition of which every chemist has foreknowledge. But the orginal research necessary to work out the process partakes of the character of an invention, and the exclusive right to the process should be granted to the inventor for a definite period of years. And we believe that the manufacturer of the original brand should be protected in the use of a word-mark to distinguish his brand; also that each brand as it appears on the market should be distinguished in a similar manner.

But the product itself, and its currently used name, or names, should never be granted to the exclusive use of anybody. As stated by Browne in his work on Trademarks, such a grant "would be giving a copyright of the most odious kind, without reference to the utility of the application or the length of the title, and one that would be perpetual. Neither the trademark law nor the copyright law, nor the patent law, affords any such right, or under the pretense of the same, allows anyone to throttle trade under the alleged sanction of the law."

The word-marks "Eagle," "Star," and other brand marks, as applied to "Eagle

*See footnote.

Brand Condensed Milk," "Star Brand Braid," etc., are not open to the objection of being the names of products. They are clearly the names of brands. In the same manner there might be several brands of acetphenetidin, as the "Phenacetine brand of Acetphenetidin," etc., etc. But the use of trade names in this legitimate fashion is not what the manufacturers want. What they want is to force their coined names into the common language as nouns, and at the same time hold on to them as trademarks. In other words, they want to "eat their cake and have it, too."

In the light of the above statement it is evident that the attempt of "proprietary" manufacturers to create and maintain monopolies in unpatented articles of commerce by claiming as private property the currently used names of such products is an invasion of public rights. Because the public is ignorant, indifferent or unmindful of its rights does not mitigate the offense in the least.

F. E. STEWART, Chairman,
S. L. HILTON,
W. BODEMANN,
J. W. ENGLAND.

In this connection, the following separate statement by J. W. England is attached:

The coined name of a chemical compound becomes, by common usage, its descriptive name or title, and the granting of product-patents to inventors, as in this country, forever estops all other inventors from *marketing* the same compound, no matter how new and original their process of manufacture may be. The second inventor can patent his process of manufacture, but he cannot patent the *product*, because it has already been product-patented by the first inventor. The privilege of product-patenting is not granted in Germany and other countries; only the process of manufacture.

Thus, in our country, invention is discouraged, instead of being encouraged, and the American people are prevented from obtaining the full fruits of the inventive genius of their own inventors.

Unquestionably, when a product-patent for a chemical compound prevents the marketing of the same chemical compound made by an entirely different process of manufacture than the one patented by the first inventor, *such product should have the right of sale in this country;* and to ensure this, Congress should give the Commissioner of Patents the right to suspend the life of a product patent whenever such conditions exist. Such action would in no wise discourage invention; it would encourage it, and this is, or rather should be, the chief function of all patent legislation.

The following separate statement by Frank H. Freericks, a member of the Commitee, is attached, also:

With his well appreciated kindness and consideration Chairman Stewart does not refer by name to the objector mentioned in his report. However the circumstances do not permit that I shirk the responsibility which every member of a Committee should feel.

I do not question at all the citations of Chairman Stewart made to sustain his position, but I would point out that every case which may be cited for that purpose must be regarded in the light of its particular facts. Freely do I admit, that I have not devoted the thought, time and study to this subject as has our Chairman, but nevertheless I take the liberty to point out that I am not yet willing to agree to his conclusions of what the law is.

That my position in that respect cannot be altogether wrong is best evidenced by the fact that our Chairman deems it necessary by statutory amendment to make the law what he now claims it to be. If the law now is what he claims it to be, then there would be no need for amendment. The law is common sense or ought to be. It is not in keeping with my sense of justice and with my common sense, if I have any, to make it impossible to exploit proper medicines of a proprietary character in the expectation of special profit, when such is regarded to be in keeping with the highest principles in other commercial lines. I believe that a man may serve the public quite well by introducing to them a proprietary medicine of

special merit as he may serve by acquainting them with a proprietary food of special quality. In either case I believe him entitled if he will run the risk of great loss for the purpose of introducing his article, to the exclusive profits which may result from such special endeavor.

However it is primarily my contention that we should not be concerned so much with deciding upon specific changes in the present law, until after there has been a fair understanding and agreement of what such changes in justice ought to be. I make the point that this phase has not had the general consideration which it deserves, and incline to believe that a large proportion of the American pharmacists and of the American public will be unwilling to approve some of the amendments proposed if they have a clear understanding of what they mean and lead to. In my humble judgment this Committee should seek to bring about a better understanding of the facts, and when an understanding of the facts has been generally arrived at it will be time to turn to legislative remedy for evils which may be agreed to exist.

H. R. 19187.

In the House of Representatives, October 8, 1914. Mr. Paige of Massachusetts introduced the following bill; which was referred to the Committee on Patents and ordered to be printed.

A BILL—To amend sections forty-eight hundred and eighty-six and forty-eight hundred and eighty-seven of the Revised Statutes, relating to patents.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section forty-eight hundred and eighty-six of the Revised Statutes, as amended by Act of Congress approved March third, eighteen hundred and ninety-seven, be, and the same is hereby, amended so as to read as follows:

"SEC. 4886. Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement thereof, not known or used by others in this country before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country before his invention or discovery thereof or more than two years prior to his application, and not in public use or on sale in this country for more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law and other due proceedings had obtain a patent therefor: *Provided,* That no patent shall be granted on any application filed subsequent to the passage of this Act upon any drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo, except in so far as the same relates to a definite process for the preparation of said drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo."

SEC. 2. That section forty-eight hundred and eighty-seven of the Revised Statutes, as amended by Act of Congress approved March third, eighteen hundred and ninety-seven, and as further amended by Act of Congress approved March third, nineteen hundred and three, be, and the same is hereby, amended so as to read as follows:

"SEC. 4887. No person otherwise entitled thereto shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declard invalid, by reason of its having been first patented or caused to be patented by the inventor or his legal representatives or assigns in a foreign country, unless the application for said foreign patent was filed more than twelve months in cases within the provisions of section forty-eight hundred and eighty-six of the Revised Statutes, and four months in cases of designs, prior to the filing of the application in this country, in which case no patent shall be granted in this country.

"An application for patent for an invention or discovery or for a design, filed in this country by any person who has previously regularly filed an application for a patent for the same invention, discovery, or design in a foreign country, which, by treaty, convention, or law, affords similar privileges to citizens of the United States, shall have the same force and effect as the same application would have if filed in this country on the date on which the application for patent for the same invention, discovery, or design was first filed in such foreign country: *Provided,* That the application in this country is filed within twelve months in cases within the provisions of section forty-eight hundred and eighty-six of the Revised Statutes, and within four months in cases of designs, from the earliest date on which any such foreign application was filed. But no patent shall be granted on an application for patent for an invention or discovery or a design which had been patented or described in a printed publication in this or any foreign country more than two years before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country, for more than two years prior to such filing: *Provided, however,* That in case any drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo, on which a patent for a definite process for the preparation thereof has been granted on any application filed subsequent to the passage of this Act, is not manufactured in the United States by or under authority of the patentee, within

two years of the granting of said patent, and after the commencement of said manufacture the same is not continuously carried on in the United States in such a manner that any persons desiring to use the article may obtain it from a manufacturing establishment in the United States, then said patentee shall have no rights under the patent laws of the United States as against any citizen of the United States who may import such drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo into the United States or who may produce or manufacture the same in the United States or who may handle for sale or use such article so imported or manufactured."

Chairman Freericks: You have heard the report of the Committee on the Revision of the Trade-mark and Patent Laws. What is your pleasure? First of all it will be proper to make a motion of some sort with reference to the report as it is now before you, and it will then be open for discussion.

Dr. Anderson: I have not a patent or trade-mark on these motions, Mr. Chairman, but I think it is necessary to have a motion in reference to it. Therefore, I move that the report be referred to the Committee on Publication. Seconded by Mr. Phillips.

Chairman Freericks: The Chair will ask his associate to act for a short time. Miss Zada M. Cooper then presided.

ABSTRACT OF DISCUSSION

G. H. P. Lichthardt: Two or three years ago I became quite interested in the subject of trademarks and patents as regards the granting of trademarks and patents on medicinal products; and I went quite thoroughly into the matter and corresponded with Chairman Stewart and he was quite kind enough to send me some rather lengthy communications on the subject. And after I had spent a good deal of time and effort I knew very little about the subject, in fact, very little more than when I started, that is, from the practical standpoint, and I feel quite as helpless today. I would like to get, in condensed form, the gist of the actual situation under our present laws, and what might be accomplished, what it is aimed to accomplish, or what is aimed to be accomplished in correcting those laws where they need correction.

I hope the discussion will bring out something really helpful and something that the ordinary layman can understand on the subject. This question of trademarks not only affects the American pharmacist, but the American Medical Society is working on it and has been for a long time. I think as long ago as 1912 the then President of the United States, William Howard Taft, spoke to the Section on Applied Chemistry and Patent Laws.

It seems to me, that the trademark, is simply a notice to the world that you have adopted thus and so. I am not very familiar with the national trademark laws, but I think the state laws are somewhat similar. It is not the name that you trademark, but it is the way it is written. I have several trademarks myself, and it is the design that you trademark and not the name. Is not that your understanding of it, Mr. Freericks?

Mr. Freericks: That is correct with reference to trademark, yes. I do not want to take up much time to refer at length to the subject. I feel rather out of place in speaking on it at all since Chairman Stewart is not here. It would be very much better if he were here, for then the discussion would not be a one-sided affair. I think Mr. England is much in accord with the views of Dr. Stewart and possibly he will do all the calling down that can be done. I am heartily in accord with the proposition that our patent laws should be amended along the line as just pointed out by the previous speaker, but my point first of all is that we have been devoting years and years discussing patent and trademark cases and you can ask wherever you will and nobody knows anything about it. They are all ready and willing to have the patent and trademark laws changed. But it is not the proper way of getting at the thing; it is a serious, very serious matter. My point is that we should know more about the facts of the trademark and patent laws, and we should not simply start off by leaving it to the Committee and taking it for granted that that Committee is properly going to represent this body. It is not fair to the Committee. It is not fair to the pharmacists of the country. It is not fair to the public, and it is not fair to ourselves.

And now with respect to the point raised about the trademarks: It is quite right. A trademark is truly a mark of some sort, some individual design that can be claimed to distinguish one man's goods from another man's goods.

But do you know that it is the tendency of your committee and others to take a wrong position,—now, I am going to name a substance.—not because I favor it particularly but it just come to my mind.

Do you believe it best, do you believe it fair, that after millions of dollars possibly have been spent to place a proprietary before the public of this country that you and everyone else should make this preparation?

Now, that is exactly what is proposed and I think it is unfair, and there is where we are making the mistake.

It affects every retail pharmacist in this country.

Many of you have preparations that you take pride in and that you have a right to take pride in. Do you think it unfair or not, that your neighbors and others should go out and make that preparation? If it had not been for you the public would not have had that merited product. And when I do that, I have taken the risk; it has been my money that has made that material known to the public, and it is nothing short of robbery to take that away from me. It is this view that I am trying to bring home to you. And if you pharmacists are not careful, you are going to have an amendment in the trademark laws of this country that will make that possible.

Mr. Binz: I heartily concur in the general statement because I have had some experience in trademark goods. I do not want you to infer from that, that I want to advertise my business at all, but it just happens to be an instance that will bring this home.

I happen to get out an Oil of Eucalyptus in the southern part of the state, an Oil of Eucalyptus which is better than the ordinary run of Eucalyptus. I have spent about five years detailing this oil among the physicians. I used no trademark. I have been sorry for years past that I did not do so.

You can go from one druggist to another and you can pick up perhaps twenty grades of eucalyptus oils and no two of them are distilled from the same variety. That is one reason why I have fallen down with the higher grade of eucalyptus oil. I did not have protection. I think that any man who makes a specialty of an article should be protected with a trademark, for the druggist never will protect him.

Mr. G. H. P. Lichthardt: I feel we are getting at least some definite expression on one point: That is, regarding copyrighting specific names, proprietary names. I agree with our Chairman, when a man spends a great deal of money in advertising a product that he ought to be protected; that when this preparation is prescribed or ordered, it should be supplied every time; but I do not believe that because this certain named compound has been exploited,—that we should prevent anyone else from putting up a similar compound and marking it under some other name. As regards Mr. Binz: He could market his product as "Oil of Eucalyptus,—Binz," and the druggist is bound to dispense the product when it is so prescribed, otherwise he is substituting. But he should not be protected in giving him a monopoly, preventing others from putting up oil of eucalyptus, or an oil which might be superior to his oil of eucalyptus, and prevent you from getting such a product. I do not just know how those points are covered by our present patent and trademark laws.

I would like to ask if there ever has been any effort made to run down the status of the trademark, that is, in the legal way, having a committee appointed to really find out what it is and where it is and where we are?

Mr. Freericks: The Chairman of this Committee, Dr. Stewart, has been at work on that for years, and for the information of all, I would say that of the many men connected with pharmacy there has been no one who has given that matter more study than Dr. Stewart has given it.

As is so often the case, and that is where we make our mistake, we appoint a committee, and the committee seeks to do its work, but the Chairman after all is the one who must do the greater part of it.

I merely call it to your attention and I apologize for expressing a personal opinion now; but the trouble is that the Committee has not been given sufficient authority; the difficulty is

that the committee on trademark and patent law revision has not been given the proper scope; that is, the membership has not given that committee, and particularly the Chairman, the attention that he has a right to ask for and he ought to have.

And if upon the report that the Chairman of the Committee on Trademark and Patent Law Revision makes annually, there would be the right discussion and expression of opinion, and if the membership generally would study the subject, in two years the pharmacists of this country would thoroughly understand the trademark and patent laws and the changes that ought to be made.

But each of you, I am sure, who have been connected with the Committee, have found yourselves doing faithful work and piling up much in the way of statistics and valuable information, and when you make up your report everybody is really pleased and they say, "Yes, we will receive it and approve it," but that does not help your committee.

It is agitation, a difference of opinion, that will bring that out, and I am hopeful that that will be done in the next year, and then, I am sure, we will understand the patent laws and trademark laws as they ought to be understood.

General Secretary Day: I have been very much interested in this subject, although, in common with some of the others present, I have not a very deep knowledge of it; but there is another phase to the proposition presented by the Chairman so ably.

With regard to a proprietary, ought there not be a limitation as to time for which a trademark would hold good? Isn't it a fact that trademarks now are practically perpetual?

After a time the trademarked word may become a common word of the language, and then have we not a right to provide for the use of similar preparations under that established name? There is a question whether we ought not be permitted to put on the market our own brands of certain proprietaries, after the preparation has reached a degree of common usage which brings the word into the language as a common word.

Mr. Lichthardt: Now, that is something definite: If a trademark confers perpetual rights under our trademark laws then the law in that respect should be amended, as Professor Day points out, so that a phrase or word that becomes practically part of the English language,—common usage—does not confer perpetual proprietary rights in that article. Now, that seems to be a perfectly clear proposition. While I have the floor I am going to dwell on another phase of trademark and patent laws, and I think the present time is the psychological moment to spring trademark changes and patent changes on the United States Congress because of the European war. I have particularly in mind the situation as regards chemicals, particularly German chemicals patented in the United States. Take for example, Salvarsan; Salvarsan is patented in this country also trademarked and copyrighted; I know it is fully protected.

While the originators of Salvarsan are protected in every possible way by the United States, the United States is not protected in any sense. We can not manufacture Salvarsan in this country. And our trademark laws evidently do not provide that the product should be manufactured in this country after a reasonable time; a reasonable time after the granting of the patent as is the case in some other countries, namely, England and France, I understand.

Now, they are making Salvarsan in Japan; making it in two or three different cities in Japan, and they are deriving the benefit of Salvarsan there, as they are also in Great Britain, where they are making Salvarsan and bringing it out under a different name, but at the same time, they are making it.

Here in this country we are absolutely helpless; even though we could make it, we are not permitted to, and moreover we are not permitted to import Salvarsan, which is made in Japan or Great Britain. I think there is something radically wrong.

We not only grant the trademark or patent privileges, but we also have to pay an excessive price.

There seems to be something very necessary there in the amending of our patent law. Of course, I do not pretend to be familiar with the subject, but it would seem to me that a very necessary amendment to our patent law is, that where a foreign product is protected by a United States patent, that product should be made in this country, so that when a condition occurs as at present in Europe, we can make the product and give the people who need that

product, that particular chemical, the opportunity of using it without being charged an excessive price for it.

Mr. England: I have listened to the discussion which took place from the different angles, and I am more than sorry that Dr. Stewart is not present to give us the benefit of his very wide knowledge on the subject. He is a walking encyclopedia on the subject of trademark and patent laws, and I could not begin to express his opinions here. It requires a man on the ground who has the technical education today to give a correct opinion.

The ground has been so fully covered by Mr. Day and Mr. Lichthardt that I do not think it is necessary to refer to the phase of the discussion covered.

Just one thought: And I think Mr. Lichthardt has struck the crux of the whole situation in that respect. He cited Salvarsan as a common example, as an illustration of patent misuse.

The *process* for making Salvarsan is patented in this country. Salvarsan as a *product* is patented in this country. The *title* is copyrighted in this country or given the protection of a trademark.

If some country discovered a new method of making it they couldn't patent it or sell the product, and it seems to me that is one feature of the patent laws which needs correction; and the one feature which particularly needs correction is the amendment of the *patent product law*.

This country stands face to face with a great dearth of coal tar products. Many of these are pat[illegible] this country, and, as Mr. Lichthardt shows, they can be made in Japan and they can be made in England and France, and they can be imported into this country, but not sold, because the products are patented.

If we are going to develop restrictions in this manner around industry in this country it will result in its being stifled. I believe we shall have to amend these laws so as to give to our manufacturers the same right that Germany gives its manufacturers. Germany has no product patent law. England has no product patent law.

In order to stimulate our chemical industries, we will have to amend our laws; it will be necessary to adopt some law of protection.

I believe in protection, protecting the men in the industries. I do not believe we will ever have development of the chemical interests of this country until they have full protection.

Note the difference between the wages that the German laborer or employee receives and the corresponding difference between the American laborer and employee.

In Germany chemists command very small salaries, but in this country relatively high salaries are paid and they are scarce at that.

The raw materials cost about the same. Much of the raw material Germany uses in the making of chemical compounds comes from this country.

Mr. Binz: I think, as Mr. England does, and Mr. Lichthardt, that the amendment should be predicated in the patent law, like the copyright and trademark law. I think the copyright and trademark law is just to the manufacturer, but I do not think the German chemist should be allowed to patent his product or his way of manufacturing and prevent it from getting into the United States, or prevent it from being manufactured.

Mr. Freericks: Not to take up any further time on that point, but to make one point clear, I would say that there is a distinction between the registration of a label and a trademark. We have the two provisions, and we may have the registration of a label or the printed name appearing on a label, and we may have a trademark; but a trademark is altogether different from the registration of a name. I merely speak of that so there will be no misunderstanding.

The vote was called for and carried.

Mr. Freericks then resumed the Chair.

Chairman Freericks: The next paper will be the report of the Committee on Drug Reform. This paper or report is presented by Chairman L. E. Sayre of that Committee.

Chairman Freericks then read the report.

Report of the Committee on Drug Reform

For the fifth time, your Committee on Drug Reform offers to the Association an annual report. From the first year of its appointment by President Rusby, the Committee has groped its way hesitatingly, as in darkness, not having a clear definition as to its function. Former reports will show that the Committee has outlined its own course and prescribed the limits of its works.

The Committee has endeavored to keep in touch and, as far as it was able, work with those who were promoting better and more uniform legislation in Food and Drug Control; with those who were endeavoring to promote a better and higher education for pharmacists, and to offer its help in promoting the cause of drug culture in the United States. The term "Drug Reform," to make it comprehensive, might mean anything that would tend to improve present conditions in the whole realm of pharmacy, but to act on such a broad program at one time would simply lead to ridiculous superficiality and, therefore, your Committee has concentrated the little work it has done in a very few directions only.

It may be said in passing that a letter from one of the members of the Committee, Albert Schneider, in reply to a request for his contribution to this report, says: "I am now engaged in preparing a bulletin on the *Cultivation of Belladonna in California* which will be published by the University. This bulletin will be the theme of my report on the cultivation of medicinal [illegible] This phase of the report, your Chairman suggested to Professor Sc[illegible]er to be his contribution. Professor Schneider has certainly had every experience in this work, contributing time and money to the same.

Your Chairman endeavored to secure through legislation in Kansas a new Pharmacy Law, which was considered by the legislative committee a model law, improving the present law now in force. The legislator, who was a pharmacist and who had in charge this model law, insisted that there should be a provision in it that the registered pharmacist and the assistant pharmacist should have pursued to successful conclusion a course of four years' high school study, or its equivalent. The Chairman advised him that he thought this would be opposed. The law also provided that every dispensing practitioner of medicine should keep a copy of his prescriptions in his office for at least two years. The doctors of medicine of the Committee on Hygiene and Public Health gave their support, believing that it would be objected to only by lazy physicians. The Section IX also provided that the regulation under which the State Board of Pharmacy is now operating, permitting it to issue a merchants' license to others than registered pharmacists when there is no pharmacist within four miles of such a merchant's place, should give authority to sell the usual domestic remedies and medicines in unbroken packages, not including any article included in Schedules A and B of the Pharmacy Act. Other sections of the bill refer to the sale of narcotic drugs and were framed to meet the requirements of the Harrison Law. Mr. C. A. Mosher, who was the champion of the bill, a pharmacist, writes of its fate in substance, as follows:

Referring to the vigorous attack of the legislature he says:

"The first gun fired against the bill threw a shot from miles beyond our ken into the high school requirement. One ally thought that high school graduates should be reserved to fill up the ranks of school marms as fast as decimated by stenography and marriage. Another thought that high school graduates 'ought to be taught to plow.' And all were agreed that my maids and lads did not need more than 'Readin', Ritin', or 'Rithmetic' to permit them to thrust their hands into the intricate mechanism of health and life.

"The various death-dealing missiles were thrown thick and fast—the legislators called them amendments; the first of these read as follows: 'All persons, firms, or corporations are hereby prohibited from selling or keeping for sale in any drug store in this State, any goods, wares, or merchandise other than medicines as defined in this act.' This shot almost 'killed the bill,' but a final blow was struck by one who has stood as a legal protector of the

drug peddler, and the legislative oppressor of physicians and pharmacists of Kansas. This final blow was presented in the form of another amendment reading as follows: 'Providing that nothing herein contained shall be construed as requiring a pharmacist, registered under existing law, *or having practiced pharmacy as proprietor in Kansas for ten years,* to take an examination.' This motion, having passed, was followed by a final one to strike out the enacting clause—which put the almost lifeless thing out of its misery."

In connection with the anti-narcotic law, your Committee has had considerable correspondence and has endeavored to give instruction in regard to it to those who were not clear in their mind as to its varied application. Your Chairman has met with various local medical organizations, to which pharmacists have been invited, where the law has been under discussion. So much active interest has been evinced in this restriction of sale and distribution of habit-forming drugs that we are now facing a mass of legislation which calls for an effort to produce uniformity—one that will promote the effective coöperation and harmonious regulation of commerce in the handling of narcotic drugs throughout the United States. So much has been said in the Journal of this Association and current pharmaceutical magazines in regard to bringing all State laws in conformity with the Harrison Act, that your Committee believes it unnecessary to do more than call attention to the draft of what is known as the N. A. R. D. State Antinarcotic Law prepared by a committee consisting of Dr. J. H. Beal, Frank H. Freericks and Hugh Craig; this draft is intended "to serve as a body of well considered provisions from which selections may be made for use in states where existing laws need to be revised." In this connection, attention should be called to articles published in the Journal of this Association (June, 1915, Pp. 702 and 707), by M. I. Wilbert and Charles Wesley Dunn. Mr. M. I. Wilbert says, in his contribution, in regard to "greater uniformity," it should be borne in mind that the Federal Antinarcotic Law is not restricted to Federal territories and to inter-state commerce, but is uniformly applicable and in force in all parts of the United States, therefore it is manifestly unnecessary to re-enact in the several states any part or all of the Federal Antinarcotic Law. Such enactment would only tend to duplicate the penalties that might be imposed.

Mention should be made also in this connection, of the activity of special committees of the Chamber of Commerce of the United States, a report from which has recently been issued on "A Proposed Uniform State Narcotic Law." Mr. B. L. Murray, of Merck & Company, is Chairman of the Sub-Committee on Drug Control. Your Committee has been in correspondence with him and desires to recommend that your future Committee shall, in every way consistent with its functions, coöperate with him and other agencies which may tend to bring about the end above mentioned.

Confirmatory to the Sherley law, a far-reaching legislative act (Senate Bill No. 229) was passed by the recent Kansas legislature which makes it a criminal offence to publish or circulate in the state, whether by newspaper, by label or otherwise, any statement regarding merchandise offered to the public, which is in fact untrue, deceptive or misleading. It will be interesting, to say the least, to see how far-reaching this new law will be when applied by the proper authorities. It suggests to our minds the idea which Prof. James H. Beal had in his address before the North Carolina Pharmaceutical Association under the caption of "A Fury for Legislation." He says in substance: "We have drifted from 'the largest field for individual initiative and the most untrammeled opportunity' into that of making 'each citizen a ward of the state and to guard and direct his every act and ambition as if he were an irresponsible and heedless infant.'" On the other hand we may say in reply to this idea that present restrictive legislation is exposing the abuses of the unscrupulous, who have taken advantage of the freedom vouchsafed us by our forefathers, and the present paternal regulation, which we shall have to bear with patience, is a burden thrust upon us by our common humanity.

It is perhaps unnecessary to say, in regard to the Stevens' Bill, that the drug trade is enthusiastically favorable to it. It will aid those who are obliged to cut prices for self-protection as well as those who are resisting the pressure to do so for the same reason. One of the most prominent of price cutters in Kansas stated to your chairman that he would vigorously support the Stevens' Bill—that he had never cut prices from choice but was forced to it by department stores, which employed this means of advertising.

To all concerned, it should be stated again and again, that this bill will *never* become a law unless retailers exert themselves and give active moral support to those who are endeavoring to promote its enactment.

There are many topics which your committee might present for study of the future Committee on Drug Reform. Your chairman will endeavor to name some of these:

1. The average druggist is showing less and less originality in his profession; is depending more and more, entirely upon the manufacturer even to the purchase of such preparations as Tincture of Ginger and Essence of Peppermint. What may this Committee do to remedy this loss of originality and initiative leading eventually to complete atrophy?
2. The handling of remedial agents by wholesale and retail grocers is becoming more and more pronounced, leading to the distribution of substandard and deteriorated goods such as sweet spirit of nitre, hydrogen peroxide, etc. What may be done along legislative lines to prevent this injustice to the public?
3. Many of the nostrums formerly advertised in the daily papers, such as crystos, spurmax, etc., also articles consisting of inexpensive ingredients having exorbitant prices, are becoming to an extent controlled by the application of the Sherley Act. What may be done by your future Committee to urge the more general application of this Act?
4. Grave injustice is caused to the public by advertisements in cheap magazines and some of the lodge journals which continue to publish fake medicine advertisements; for example, Dr. Grain's cure for deafness (found to be a solution of potassium iodide). For the betterment of such conditions this Association should systematically co-operate with the work of the American Medical Association.

The report of the British Pharmaceutical Parliamentary Conference on Proprietary and Patent remedies, a summary of which was published by J. H. Beal in the February issue of the Practical Druggist, should be studied by every pharmacist. The findings of this committee are not by any means encouraging to the proprietary and patent medicine interests. The recommendations of this committee seem to your chairman fair and even liberal. We would recommend that this report of Professor Beal's be reprinted in the Journal of this Association and widely circulated.

Respectfully submitted for the Committee,

L. E. SAYRE, Chairman.

Chairman Freericks: You have heard the report of the Committee on Drug Reform, and it is before you. What is your pleasure?

General Secretary Day: I move that the report be accepted and referred to the Committee on Publication, and that the recommendations be approved.

The motion having been regularly made and duly seconded, and the question put, the same was declared carried.

Chairman Freericks: The next order of business is a paper by Prof. Arny.

Prof. Arny: I move that it be read by title and referred to the proper committee for publication.

The motion was seconded by Mr. Binz, and the question having been put, was declared carried, and the paper was read by title and referred to the Committee for publication.

Chairman Freericks: The next paper is by Wilhelm Bodemann, and since the Chair feels deeply obligated to Mr. Bodemann for writing this paper, he would ask the privilege of reading it.

After discussion the paper was referred to the Publication Committee.

Chairman Freericks: The next paper is by Mr. Hugh Craig on the N. A. R. D. model anti-narcotic bill, a subject in which we are all interested. Mr. Thiesing is here and he has kindly agreed to read this paper for Mr. Craig.

THE N. A. R. D. MODEL FOR A STATE ANTI-NARCOTIC LAW

HUGH CRAIG, CHICAGO.

Because of the many requests received at the office of the National Association of Retail Druggists from pharmacists interested in legislative activities in their respective states, who desired some basis for the construction of a state law to supplement the federal anti-narcotic statute, and in recognition of the fact that the soon-to-open sessions of some forty state legislatures would be the occasion of a multitude of endeavors to put some sort of anti-narcotic measure upon the statutes, the N. A. R. D. executive committee, at the meeting held in December, 1914, invited Dr. J. H. Beal, Frank H. Freericks, Esq., and Hugh Craig to serve as a special committee to prepare a draft of a model for a state anti-narcotic law. The outcome of the endeavors of this committee was the draft which has come to be known as the "N. A. R. D. Model Anti-Narcotic Bill," the name being a bit inappropriate as the draft is not advanced as a model bill but as a model for a bill. This draft has been printed in full in the *Journal of the American Pharmaceutical Association*, in the issue of May, 1915; and in the same issue of the *Journal*, appeared an able analysis of its provisions by Dr. J. H. Beal. Any detailed reference to these provisions is, therefore, herein unnecessary, and such reference as needs be made to them will, of course, be a repetition in part of the text of Dr. Beal's article.

In the first place the purpose of the N. A. R. D. draft is to promote uniformity among the anti-narcotic laws of the several states and the Harrison law. Uniformity, with reference to the several states, is very important because of the unavoidable condition of law-evasion which obtains near the borders of two or more contiguous states whose statutes do not provide equally for the regulation and restriction of traffic in narcotics. If a person may cross from New York to Jersey City, or vice versa, and in the latter city obtain narcotics more readily than in his home community, and carry them into New York to dispose of them in an illegal manner, the effectiveness of the New York regulations is seriously impaired, despite the attempt at the restriction of interstate traffic made in the Harrison law. At best only the illicit distributor can be apprehended and punished; the source and channel for further traffic are not closed. The necessity for uniformity in general provisions of a state law and the federal act is clear to anyone who has had to attempt compliance with different provisions.

In appreciation of the fact that many existing state laws need but slight alteration to make them effective supplements of the federal act, the committee constructed a somewhat expanded form of draft from which desirable sections might be selected as amendments to the existing law. This form of draft was also considered best adaptable to revision as necessitated by local conditions or desires, because changes in any one or several provisions or their deletion would not effect the general purpose of the draft or disrupt its coherence.

The committee had in mind the necessity for the regulation of every channel for the distribution of narcotics and, as well, that for reducing to a minimum the opportunity for possessing these substances for immoral and illegal purposes. It is this last-mentioned necessity which, above all others, justifies the preparation of this draft. Many have argued that the federal anti-narcotic law

removes the necessity for state laws relating to the traffic in narcotics. This willingness to hand over to a paternalistic federal government the entire regulation of an intrastate practice is too patent an indication of a let-the-other-fellow-do-it attitude, a too complete relinquishing of state's rights. Also there is every indication that the federal law, in its provision to restrict the possession of narcotics, not had for purposes of sale or other disposal, constitutes an illegal encroachment upon the rights of the several states. Already the majority of decisions in the federal courts have been antagonistic to this extension of federal supervision. Not alone in this but in a number of other instances is it clear that intrastate traffic in narcotics can more effectively and more reasonably be regulated by a properly constructed state law than by the Harrison law and the regulations incident thereto.

In one point at which the N. A. R. D. draft differs from the federal law and on which the Harrison law has been assailed with an apparent indication of the act being changed, is the regulation of the dispensing of narcotics by a physician. It seemed to the committee that to discriminate against the exclusive office practitioner, whose numbers are large in every city, was uncalled for, and that the distinction in this regard should be drawn along the same lines as the exemption of preparations. Therefore the exemption of the physician, proposed by the committee, is based upon the quantity of the narcotic disposed of. These quantities are arbitrary, although sufficient for every legitimate purpose, and may, of course, be changed to suit the ideas of pharmacal bodies in any particular state.

The prescribed preparation is not discriminated against in this draft, as is, unfortunately, the case in the Commissioner of Internal Revenue's interpretation of the Harrison law. In general, the treatment of the dispensing of narcotics in pursuance of prescriptions is the same in this draft as in the state laws of recent enactment, although a stricter accountability is laid upon the possessor of narcotics, who might allege that they were obtained in a legitimate way, by specific requirements relative to the labeling of drugs dispensed on a prescription and possessed in consequence of such dispensing. Pharmacists are relieved from responsibility for the authenticity of prescriptions if they have exercised due care in the scrutiny thereof.

In the matter of exempting preparations containing minimum quantities of narcotics, the N. A. R. D. draft obviates the condition which was largely responsible for Treasury Decision 2213, denying exemption under the Harrison law to extemporaneous prescribed preparations, by providing that exemption shall extend only to preparations which contain other medicinal substances in admixture with the narcotics. The exemption also applies only to preparations containing but *one* of the opiates in the specified proportion (the same as the Harrison law). The right to sell these preparations is not, however, extended indiscriminately, itinerant vendors and storekeepers located less than a mile distant from a drug store or a physician's office being denied this right, and storekeepers located so as to escape this prohibition are required to obtain a license from the state board of pharmacy. A similar license is required to be obtained by wholesale dealers, manufacturers, and hospitals which do not employ a licensed pharmacist, physician, dentist, or veterinarian to supervise the handling of narcotics.

Specific definition is given of all those who in any manner may deal in or possess narcotics and also of their respective rights. Misrepresentation for the purpose of evading these definitions is made illegal. In this manner the operations of bogus concerns and the assumption of false professional titles is guarded against.

In making proof of possession *prima facie* evidence of dealing in the proscribed substances, in providing for the punishment of individual members of firms and corporations and of agents, and in relieving prosecutors from the

obligation of negativing exemptions, the draft does much to assure the effective enforcement of its provisions. The enforcement of the provisions is entrusted to the state board of pharmacy and public prosecutors, the board of health being given power to supervise the practice of physicians in the treatment of addicts to the use of a narcotic. There can be no question but that the efforts of the board of pharmacy in connection with the enforcement of an anti-narcotic law will be received with better grace by pharmacists, than would the efforts of a board of health, because the former body may more reasonably be expected to have the peculiar appreciation of pharmacal practice, and medical practice as well, which is so necessary to guard against unreasonable procedure. That the assistance of public prosecutors is necessary need but be mentioned in view of the general recognition of the limitations of boards of pharmacy in funds and agents.

Constructed with an ever-present purpose to correlate effectiveness and reasonableness, the N. A. R. D. model for a state anti-narcotic law affords a valuable basis for the work of legislative committees of pharmacal bodies, who are confronted with the necessity of preparing a draft for a state law to meet a widespread demand for the enactment of anti-narcotic legislation, or are disturbed by the furtherance of measures of this sort, by well-meaning but poorly informed advocates. The draft is not offered as an ideal model; but, as a foundation for real constructive work, it offers the result of careful deliberation. Insofar as the committee which framed it and the association which stands sponsor for it are concerned, there is no intention of cramming the full, unrevised text of this draft upon any who may be engaged in the consideration of anti-narcotic legislation, and assistance will be gladly extended to those who desire to make changes in it.

Chairman Freericks: You have before you the paper of Mr. Hugh Craig on a model anti-narcotic law. What is your pleasure?

Mr. Weinstein: I move that it be received and that it take the usual course. Motion seconded by Mr. Binz.

Chairman Freericks: Are there any remarks?

The motion having been regularly made and duly seconded, and the question called for, the same was declared carried.

The next paper is by Dr. Fischelis on "Providing Needed Education."

Professor H. V. Arny then read Dr. Fischelis' paper. This paper was published in the October number, page 1235.

Chairman Freericks: You have heard the paper, what is your pleasure?

Prof. Arny: I move that it be referred to the Committee on Publication because it should not only be published, but there may also be some ideas contained therein worth considering.

President Mayo: I suggest it be referred to the Committee on Publication with the approval of the Section; the added suggestion that it was approved by the Section would cover the ground.

Seconded by Mr. F. W. Nitardy.

Mr. Lichthardt: There are two very excellent ideas in it. First, to send out these bulletins to the newspapers. It will probably have to be done in a small way at first, and sent to the very prominent papers. It is a very excellent idea. That is the way to deal with the problems that we were dwelling upon a little while ago with respect to the dispensing physician.

Now, on the matter of abstracts. In the Scientific Section we prepared abstracts; that is, Mr. England and myself, on all the papers but two, I think, which

were submitted and the authors of which were absent, and instead of just reading the paper by title we read the abstracts and it gave those present an idea of what the paper contained. It is a much better idea to prepare the abstracts and publish them in the Journal before the meeting, and it will very likely do away with some objectionable papers.

The motion having been regularly made and duly seconded, and the question put, the same was declared carried.

Chairman Freericks: There has been referred to this Section from the Commercial Section, that is, from the general session to the Section on Education and Legislation, and then to the Commercial Section and from the Commercial Section to this Section, a most interesting paper by Dr. A. O. Zwick of Cincinnati. The Chairman of your Commercial Section and your present Chairman feel under obligation to Dr. Zwick because this paper touches upon a subject of vital concern to pharmacy as treated by a physician.

This paper is really presented in answer to the raising of the question as to whether prescription charges,—the prices as fixed on prescriptions—have not something to do with the growing evil of dispensing by physicians. The paper does not answer the question either one way or the other directly; but that was the thought, and I want to submit it to you for future consideration, to let you know how important a thought it is.

Moved by Dr. Anderson, and seconded by Mr. Nitardy, that the paper take the usual course.

Chairman Freericks: Now, the last thing on the program, outside of the election of officers, is the report of the Voluntary Conference for Drafting a Modern Pharmacy Law.

We appreciate fully what is necessary in order to take up the subject intelligently, but a report has been prepared showing the progress of the work to date, and I believe it will be interesting.

REPORT OF THE VOLUNTARY CONFERENCE FOR DRAFTING MODERN LAWS PERTAINING TO PHARMACY.

F. H. FREERICKS, CHAIRMAN.

Impressed by the frequently expressed need for greater uniformity in the several state laws concerning pharmacy, and for making such laws more in keeping with general advancement and progress, the Chairman of your Section on Education and Legislation by and with the co-operation of his associates and the Secretary undertook to commence that work. It was agreed that a very general interest from every state would need to be created and to that end it was deemed essential that the co-operation of every state association and state board of pharmacy should first be sought with a view of forming a voluntary conference in which every such state association and state board of pharmacy would be represented by one member.

Shortly after the last annual convention of the A. Ph. A., at Detroit, the Chairman of your Section submitted an outline of the intended work to the presidents of every state pharmaceutical association and state board of pharmacy, and requested each of them to name a representative for their respective association or board, who together would then constitute a voluntary conference under the auspices of the Section on Education and Legislation. Almost without exception the responses were most hearty, and the interest shown most general.

Some few pointed to the fact, that in the states from which they came the present laws were fairly satisfactory, but in such cases in keeping with the great majority who responded it was agreed that more uniformity in state laws was highly desirable, and new features might be added in order to better safeguard the public interests and welfare. It is with no small measure of satisfaction that we point to the fact that forty-two (42) state pharmaceutical associations, and forty-four (44) state boards of pharmacy through their presidents appointed members to the Voluntary Conference. The list of members so appointed is separately shown in connection with some new provisions now under consideration by the Conference, and which are attached to and made a part of this report. It should in that connection be mentioned that owing to the death of Mr. James O'Hare of Rhode Island, President Armstrong of the Rhode Island Association named Mr. Frank A. Jackson to fill the vacancy thus created. Owing to the inability of Prof. Hemm of Missouri to further serve, the vacancy thus created was filled by the appointment of Mr. Chas. E. Zinn.

In outlining the work of the Voluntary Conference it was at first thought possible to present a complete draft of laws pertaining to pharmacy at this meeting to be expressive of the best opinion of at least a majority of the Conference members, but within the past six weeks this has been found to be hardly possible and certainly inadvisable. After the Conference members had been generally appointed they were requested to submit changes which they deemed necessary in their respective present state laws and to suggest new features for a compilation of modern laws such as they deemed desirable. Responses in this connection were quite general, and temporarily holding in abeyance the amendments thought necessary to the existing laws in different states, attention was first given to the new features which seemed desirable. Suggestions for such new features were put together and then again submitted to all of the Conference members, to find a fairly general approval. After such fairly general approval of such suggestions they were drafted into more concrete form so as to secure an idea as to the scope and extent which might meet with the views of the membership. Unfortunately because of the mass of correspondence and the incident delays which always come when many are concerned, it was not possible to present these new features in such concrete form in time to have them find consideration at all of the state meetings held within the past two or three months. In some few states where they reached in time and where they might have been considered, the work already outlined for the conventions made it impossible to give the necessary consideration, while in other states they were most thoroughly considered and discussed. Since a complete draft of laws will be largely dependent upon the new features, which are found desirable, and since it is deemed of prime importance that such new features be discussed at this convention, it has therefore been decided that they should at this time be first and separately submitted, together with such criticisms and suggestions as have been made by state associations and state boards which have found opportunity to consider them. There are eight of such new provisions at present under consideration, and these are in printed form and have or will be distributed to all who are now present, so that they may find intelligent consideration and discussion, properly constituting a part of this report as already stated. It must be understood that the separate provisions as herein and herewith presented have not been put in their final and most concrete form, the thought being to simply submit a fair outline for ready understanding, and even if the separate provisions meet approval, in their present form, it is deemed likely that the phraseology can be much improved.

To this time it has been reported that the State Association and in some instances the State Board of the states of Colorado, Massachusetts, Ohio, Pennsylvania, South Carolina and Washington have given thorough consideration to the new provisions as presented in concrete form. In addition they have been

thoroughly considered by representatives in the conference from California, Connecticut, Illinois, Michigan, North Carolina, North Dakota, and have found some consideration by the Missouri State Association. The representative from California does not approve Provisions 1 and 2, but in general approves all of the other provisions. The Colorado State Association and State Board approve Provisions 1, 2 and 3 and in part 4 and 5. They disapprove of 6 and 7 because opposed to Reciprocal Registration, and withhold action on Provision 8. The Connecticut Board of Pharmacy in general approves all of the provisions. The Massachusetts Association approves all of the provisions except No. 5, believing that Provision No. 5 would force the prerequisite, which does not seem to be favored. The Michigan State Board and State Association representatives favor all of the eight provisions, but doubt the possibility of securing the first three as a law. The Illinois and North Carolina Association representatives approve all of the eight provisions in the strongest terms. The North Dakota Representatives approve all the provisions, expressing the opinion, however, that some change should be made to provide Reciprocal Registration for those who were registered as pharmacists before the college prerequisite was adopted. The Missouri State Association approves the provisions in a general way, but indicates that they think well of their present law. The Ohio State Association approves the principles of the eight provisions, with a clear understanding and marked satisfaction. The Pennsylvania State Association and Board approve the first seven provisions, but disapprove the eighth provision, believing that all laws pertaining to pharmacy should be enforced only under the supervision of officials connected with pharmacy. The South Carolina Association unanimously approved all of the eight provisions. The Washington Association and apparently its Board of Pharmacy approved the first seven provisions, excepting that in Provision No. 5 they favor a course of study of 1800 hours instead of 1200 hours. No action was taken with reference to Provision No. 8, because it was believed doubtful that a change might be secured in the Washington law where the enforcement now rests with the Department of Agriculture. Comments were also received from Dr. James H. Beal, which are of a general nature, but whose further help in the work of the Conference will be of great advantage.

Your chairman would now recommend:

1st.—That the new provisions submitted find consideration at this time.

2nd.—That the Voluntary Conference be continued under the auspices of the Section on Education and Legislation, until the work is finally completed with the presentation of a draft of Modern Laws Pertaining to Pharmacy.

3rd.—That an appropriation of $100.00 be allowed the Section for the coming year to continue this work.

4th.—That with such changes as may be decided upon, the eight new provisions be referred back to the Voluntary Conference under the chairmanship of the chairman of the Section on Education and Legislation elected for the new year.

5th.—That with such changes as may be decided upon, the provisions be submitted to the National Association of Retail Druggists, the Conference of Pharmaceutical Faculties, the National Association of Boards of Pharmacy, and to other National Associations which are concerned with pharmacy. Also to the American Medical Association and to all of the State Medical Associations, their particular attention being directed to the first three and to the eighth provisions. That in submitting the provisions for such consideration they be accompanied with a request for an expression of opinion concerning such as may be of special interest.

In conclusion attention is directed to the fact that nearly all, if not all, of the provisions herewith submitted for further consideration, in some manner affect special interests. It is understood or rather must be taken for granted, that there will be opposition to the provisions even if generally approved by retail

pharmacists and by the legitimate members of the medical profession. In one form or another such opposition has already been evidenced. It must be in mind, too, that such opposition may not always be in the open, for at times special interests can best attain their purpose by keeping themselves in the background. In this entire work the aim must be primarily the public welfare and its needs. Selfish aims, whether on the part of retail pharmacists or some of the other branches of pharmacy, or those engaged in medicine, are unworthy of the work which has been undertaken.

VOLUNTARY CONFERENCE FOR DRAFTING MODERN LAWS PERTAINING TO PHARMACY.

Under the Auspices of the Section on Education and Legislation of American Pharmaceutical Association. Frank H. Freericks, Chairman; R. A. Kuever, Secretary; W. S. Richardson, George B. Topping and Zada M. Cooper, Associates.

Conference members appointed by Presidents of State Associations and Boards of Pharmacy.

Representing State Associations:—Alabama, L. L. Scarborough; Arizona, Thomas E. Thorpe; Arkansas, A. L. Morgan; California, D. R. Rees; Colorado, A. W. Clark; Connecticut, S. M. Aller; Delaware, Albert Dougherty; District of Columbia, W. S. Richardson; Florida, W. D. Jones; Georgia, Herman Shuptrine; Idaho, Rosco W. Smith; Illinois, Prof. C. M. Snow; Indiana, A. F. Sala; Iowa, George D. Newcombe; Kansas, C. C. Reed; Kentucky, Robert J. Frick; Louisiana, Joseph W. Peyton; Maryland, James E. Hancock; Massachusetts, Ernest O. Engstrom; Michigan, John H. Webster; Minnesota, Charles H. Huhn; Mississippi, A. S. Coody; Missouri, Prof. Francis Hemm; Montana, J. A. Riedel; Nebraska, Charles R. Sherman; Nevada, H. J. Duncan; New Hampshire, Edwin C. Bean; New Jersey, George M. Beringer; New Mexico, G. S. Moore; New York, Dr. William C. Anderson; North Carolina, L. W. McKesson; North Dakota, W. S. Parker; Ohio, Waldo M. Bowman; Oklahoma, A. W. Woodmancy; Pennsylvania, S. C. Henry; Rhode Island, James O'Hare; South Carolina, F. M. Ellerbe; South Dakota, D. F. Jones; Tennessee, Edw. V. Sheely; Texas, Sam P. Harbin; Utah, James L. Franken; Vermont, W. R. Warner; Virginia, Walter G. Williams; Washington, Prof. Charles W. Johnson; West Virginia, Walter E. Dittmeyer; Wisconsin, Prof. Edw. Kremers.

Representing State Boards of Pharmacy:—Alabama, W. E. Bingham; Arizona, T. L. McCutchen; Arkansas, Frank Schachleiter; Colorado, Frank E. Mortensen; Connecticut, John A. Leverty; Delaware, Reuben M. Kaufman; Georgia, Charles D. Jordan; Idaho, T. M. Starrh; Illinois, Frederic T. Provost; Indiana, Jerome J. Keene; Iowa, David E. Hadden; Kansas, W. S. Henrion; Kentucky, Addison Dimmitt; Louisiana, E. H. Walsdorf; Maine, Frank T. Crane; Maryland, J. Fuller Frames; Massachusetts, Albert J. Brunelle; Michigan, Leonard A. Seltzer; Minnesota, R. L. Morland; Mississippi, T. O. Slaughter; Missouri, Charles Gietner; Montana, W. R. Montgomery; Nevada, Robert L. Prouty; New Hampshire, Herbert E. Rice; New Jersey, Lewis W. Brown; New Mexico, B. G. Dyne; New York, Warren L. Bradt; North Carolina, W. W. Horne; North Dakota, H. L. Haussamen; Ohio, Edward Voss, Jr.; Oklahoma, J. C. Burton; Oregon, J. Lee Brown; Pennsylvania, Lucius L. Walton; Rhode Island, Howard A. Pearce; South Carolina, H. E. Heinitsh; South Dakota, F. W. Halbkat; Tennessee, O. J. Nance; Texas, W. H.Cousins; Utah, John Culley; Vermont, Wilfred Root; Virginia, W. L. Lyle; Washington, D. B. Garrison; West Virginia, Alfred Walker; Wisconsin, Edward Williams; Wyoming, C. B. Gunnell.

PROVISIONS FOR THE DRAFT OF MODERN PHARMACY LAW UNDER CONSIDERATION BY THE VOLUNTARY CONFERENCE FOR DRAFTING SUCH A LAW.

It will please be understood that such of the provisions as may find general approval are intended to be embodied in a complete draft of laws pertaining to pharmacy, which shall include all of the desirable provisions which are found at present in the best and most complete pharmacy laws of the several states. It of course is in mind that some provisions of a Modern Pharmacy Law, particularly the provision with reference to the College

Prerequisite Law, will not be deemed desirable in all of the states, and it is understood that features which are not adapted for some of the states can be discarded by such states when they would consider the draft of a Modern Pharmacy Law as a basis for adoption or changes. It will please also be understood that some of the separate provisions as herein submitted for consideration are entirely independent of each other, and that only such provisions should be considered together as by their text show that this must be intended. Finally, it will also please be in mind that it will not be the aim to discard any more exacting requirement which may be found in some of the present pharmacy laws, but to the contrary it will be the aim to have any of the provisions herein which may be found to be desirable, fit in with such possibly more exacting requirements as now may exist. In considering what should be contained in a Modern Pharmacy Law it is submitted that we should be controlled only by the public need and welfare and by the need of correct pharmacy within reasonable limits. The thought that desirable features may be strongly opposed by special interests should not hinder us from promulgating such desirable and necessary features. Let us first decide upon what within reason is desirable and necessary, and thereafter decide upon ways and means for best securing enactment into law. We may find determination and strength in the fact that whatever public welfare requires and fairness demands will ultimately be accomplished.

Provision No. 1.—All chemicals and drugs, the maximum adult dose of which according to standard authorities on medicine or materia medica is one drachm or less either fluid or solid, as also compounds and preparations containing such chemicals and drugs, and inclusive specially of Morphine, Opium, Heroin, Chloroform, Alcohol, Cannabis Indica, Hydrated Chloral and Acetanilide, or any derivatives or preparations of said substances, are hereby defined to be of potent character: Provided, that drugs herein not specially named, the maximum adult dose of which is greater than one (1) drachm, but containing active principles of lesser maximum adult dose, as well as compounds and preparations of such drugs, shall be construed to be of potent character only when they contain the isolated active principle as such, and not as a constituent of the original drug.

NOTE.—If there are to be legal restrictions over those who would sell so-called patent and proprietary medicines it is essential that some legal ground be found upon which such restriction can be constitutionally based. If the right of sale and distribution is to be limited to qualified people, the means must be provided for bringing into use the special knowledge of such qualified people, and this can be done only by ready information about the contents of active drugs. At the same time it is all-important to avoid unfairness and the destruction of property rights by requiring publication of complete formula. It was therefore decided to submit a definition for potent drugs, as supplemented by the further requirement to show on the label the actual contents of potent drugs, which gives opportunity for the application of special knowledge pertaining to their use as remedies.

Provision No. 2.—All chemicals, drugs, their compounds and preparations, of potent character as herein defined, when intended for use as medicines, shall be dispensed, distributed or sold only in containers bearing a label for ready inspection, upon which such potent drug content is plainly shown, as also the percentage of such drugs contained therein: Provided, that when such chemicals and drugs are dispensed in keeping with a written record as made by a licensed physician, dentist or veterinarian, and such written record is retained or filed by the pharmacist, physician, dentist or veterinarian, the label requirement herein shall be satisfied when the container of the chemicals and drugs so dispensed contains a number or mark, corresponding with a number or mark on the written record, so that it may be readily identified.

NOTE.—The aim of this provision is to require all packages of medicines to show their contents of potent drugs, no matter by whom prepared or distributed at retail. An exception is made with reference to medicines supplied by or on the order of a physician, dentist or veterinarian. In every such case, however, whether the medicine is dispensed by a physician or by a pharmacist, a record must be made, either on a prescription blank or in a record book, to show the potent drugs which have been dispensed, and the container is then to be identified by a number corresponding with a number on the prescription or other written record. It will be noted that this plan contemplates no distinction between so-called patent medicines and medicines supplied by or on the order of physicians, it being deemed alike important and a public need that it can always be determined what potent drugs a patient may be taking, or may have taken.

Provision No. 3.—All chemicals, drugs, their compounds and preparations, when of potent character as herein defined, when intended as medicines, except as hereinafter provided, shall be dispensed and sold at retail to the consumer only by or under the supervision of a registered pharmacist; compounds and preparations of such chemicals and drugs shall be compounded and prepared only by or under the supervision of a registered pharmacist. All such chemicals, drugs, their compounds and preparations, when intended for distribution or sale at retail as medicines in their original packages, shall be labeled to show that they have been prepared by or under the supervision of a registered pharmacist. When imported into this state for sale at retail, they shall in like manner show that they have been prepared by or under the supervision of a pharmacist licensed or registered at the place where compounded or prepared. Such chemicals, drugs, their compounds and preparations, when compounded, prepared and labeled in their original packages as herein required may be dispensed or may be dispensed from and sold by registered physicians, dentists and veterinarians without showing on the label by whom compounded or prepared: Provided, also, that such chemicals, drugs, their compounds or preparations, when compounded, manufactured or prepared by or under the supervision of a registered pharmacist, may be sold or dispensed at retail in communities or places located at least — miles distant from a registered pharmacy, by storekeepers licensed for that purpose by the Board of Pharmacy.

NOTE.—Under this provision it is the principal requirement that all medicines containing potent drugs must be compounded by or under the supervision of a registered pharmacist. This applies alike to so-called patent and proprietary medicines, as also to all medicines dispensed by physicians. It would require every patent and proprietary manufacturer and manufacturer of pharmaceuticals to have at least one registered pharmacist in charge. It would not interfere with the dispensing of medicines by doctors, but would require that the medicines which they dispense are prepared under the supervision of a registered pharmacist, and would prevent them from compounding their own medicines unless they are also registered pharmacists. It would restrict the sale at retail of all medicines containing potent drugs, other than those dispensed by physicians to their patients, exclusively to registered pharmacists, excepting in communities where there are no registered pharmacists within a certain distance, and at such places storekeepers duly licensed by the Board of Pharmacy would be permitted to sell such medicines when compounded under the supervision of a registered pharmacist.

Provision No. 4.—The State Board of Pharmacy shall consist of five members to be nominated by the State Pharmaceutical Association, and to be appointed by the Governor, etc., at least three (3) of whom shall be graduates of a reputable College of Pharmacy, and all of whom shall be actively engaged in retail pharmacy, having had at least ten (10) years of practical experience therein, the requirement for college graduation not to be applicable to those who at present are members of the existing State Board of Pharmacy.

Provision No. 5.—Colleges, Departments and Schools of Pharmacy, to be recognized as such by the State Board of Pharmacy, shall require for graduation a course of study of at least two (2) years, such two year course to be divided by an interim of at least two months, and to provide for at least twelve hundred (1,200) hours of study. They shall have a Chair in Pharmacy, Chemistry and Materia Medica, each in charge of a professor having besides the necessary special learning and training either an academic or scientific degree, or both, from some reputable institution of learning: Provided, that nothing contained in this Section shall apply to those who when this Act becomes effective are or have been teaching in Colleges, Departments or Schools of Pharmacy.

Provision No. 6.—The State Board of Pharmacy may in its discretion grant Certificates of Registration to persons who furnish proof that they have been registered by examination in some other state, and that they are of good moral character, provided, that such other state in its examination requires the same general degree of fitness as is required by examination in this state, and that the applicant qualifies in all other respects as is required for registration by examination within this state, and provided also, that such other state or states in like manner grant reciprocal registration to pharmacists and assistant pharmacists of this state. Applicants to the State Board of Pharmacy for Reciprocal Registra-

tion shall defray all necessary expense for making an investigation into their character and general reputation, as well as pharmaceutical standing in the state where they formerly resided, such expense of investigation not to exceed the sum of ten (10) dollars, and for the purpose of such investigation and report thereon, the State Board of Pharmacy may secure the service of individuals or associations who are engaged in the work of compiling such information, at an expense not to exceed ten (10) dollars in each separate case. In addition, an application for Reciprocal Registration shall be accompanied by an original registration fee of $10.00, which shall be refunded in case registration is not granted.

NOTE.—It is the aim of this provision to allow a Pharmacist registered by examination in a state not having the College prerequisite, to become registered in another state which has such College prerequisite, if the applicant can prove that in addition to his registration by examination he also is a graduate of a recognized College. This provision also looks to placing the activities of the National Association of Boards of Pharmacy on a legal basis within each state by permitting that the information which said Association is prepared to furnish regarding an applicant for reciprocal registration, may be secured by the different State Boards at an expense not to exceed $10.00, which must be paid by the applicant for reciprocal registration.

Provision No. 7.—In order that the State Board of Pharmacy may be informed, and properly determine the status of the Boards of Pharmacy of other states desiring Reciprocal Registration, and that it may be generally advised regarding progress in pharmacy throughout the country, the said Board shall annually select one of its members, who shall meet with like representatives of such other State Boards of Pharmacy, as may be arranged, for the purpose of discussing and determining the degree of fitness required by such Boards, and the general advancement as made in Pharmacy. The expense of such representative shall be paid and allowed as are all other lawful expenditures of the members of the Board of Pharmacy. At meetings arranged for between the representatives of this State Board of Pharmacy with the representatives of other State Boards of Pharmacy desiring reciprocal registration there may be adopted uniform regulations and requirements which are deemed desirable by each of said representatives for their respective states to govern reciprocal registration, but such rules and regulations shall not be construed as based upon agreement by an official of this state with officials of other states, and they shall be binding only if adopted by the State Board of Pharmacy as its own rules and regulations, and then only to govern within this state as the result of independent decision on the part of the State Board of Pharmacy, without any agreement by or with other State Boards of Pharmacy. The representative of the State Board of Pharmacy as such shall not enter into or join in the formation of any association depending upon agreement between the officials of this state with the officials of other states, but this shall not be construed to prevent such representative in his individual capacity from joining or being a member of an association which may be constituted of the representatives of State Boards of Pharmacy, also acting in their individual capacity. Any association so existing which is engaged in the compilation and study of the work of State Boards of Pharmacy, and which has for its object the general advancement of pharmacy and the keeping of records pertaining to the reciprocal registration of pharmacists, may at the discretion of the State Board of Pharmacy be given such information as it possesses pertaining to such aims and objects. The State Board of Pharmacy at an expense not to exceed one hundred ($100) dollars annually may subscribe for and secure the services of an association engaged in the compilation of pharmaceutical information and progress specially adapted for securing the greatest efficiency in the work of said Board.

NOTE.—This provision aims first of all to specifically legalize the expense of representatives of Boards of Pharmacy in meeting with representatives of other Boards of Pharmacy. It avoids agreement between officials of the several states which might be unconstitutional, and yet allows representatives of State Boards in their individual capacity to belong to an Association which is organized for the purpose of compiling and disseminating information of value to all of the several State Boards of Pharmacy. Finally, it permits the several State Boards of Pharmacy to subscribe for the services of such an Association, thus indirectly defraying the expense of maintaining it. In order to legalize such expenditure, the Association of Boards of Pharmacy is placed on the basis of a Bureau of Information, which renders needed service for an annual consideration, just as a Commercial Agency renders service to Commercial Enterprises, for an annual subscription fee.

Provision No. 8.—There shall be established within this state the office of a Drug Commisisoner, who shall be selected and appointed at a joint meeting of the State Medical Board and the State Board of Pharmacy by said Boards. He shall hold office for a term of five (5) years, until his successor has been appointed, subject to removal for incompetency or other good cause. Subject to the authority of the State Boards of Medicine and of Pharmacy in joint meeting, it shall be the duty of the Drug Commissioner to enforce the Pure Drug, Poison and Narcotic Laws of this state, and for that purpose he may employ chemists, inspectors and other necessary employees within the appropriations allowed him for the enforcement of said laws. Within thirty (30) days after this Act is in force it shall be the duty of the President of the State Board of Pharmacy to call a joint meeting of the members of the State Medical and Pharmacy Boards, at the capital of the state and at a place to be designated by him, such meeting to be called on a notice of at least ten (10) days. At such joint meeting, it shall be the duty of the members of both said Boards to attend, they shall organize by selecting a President, Vice President and Secretary of said joint boards. The Secretary of either the State Medical Board or the State Board of Pharmacy, as decided at said meeting, shall act as the Secretary for said joint boards, he shall be allowed such extra compensation as may be decided, not to exceed the sum of one hundred ($100) dollars annually, and it shall be his duty to keep a separate book of the Minutes and Proceedings of said joint boards. Said boards shall meet in joint session at least annually, and at such other times as may be decided at such joint meetings, and also at the call of the President. If membership on said respective boards be of unlike number, the members of the board having the largest number shall collectively have no greater number of votes than there are members of the smaller board. In the absence of agreement in the selection of a Drug Commissioner at joint meetings held for that purpose, such failure to agree shall be certified to the Governor, who thereupon shall make the appointment. It shall be the duty of said boards in joint meeting to adopt rules and regulations to govern them for the purpose of such joint meeting, and to govern the Drug Commissioner in the performance of his duties. At the annual meetings of said boards in joint session after becoming fully informed as to the needs and requirements in that respect, said boards in joint meeting shall decide upon the annual appropriation to be paid out of the funds of the state necessary for conducting the office of the Drug Commissioner, and shall submit the needs for such annual appropriations to the proper committee or committees of the General Assembly for suitable action by it.

NOTE.—The enforcement of Drug, Poison and Narcotic Laws should be under the control and supervision of those who have special knowledge pertaining to them and their correct use. In nearly all of the states this important need is ignored. Physicians and pharmacists are equally and primarily interested, and in many respects such laws must govern them alike. It therefore has been deemed advisable by some, that the supervision and enforcement of such laws should be under the control of the recognized Medical and Pharmaceutical Authorities. The thought has been expressed also that by thus bringing together the State Authorities concerned respectively with medicine and with pharmacy, there will be greater opportunity for mutual understanding and more friendly relationship between the two professions.

Now, the Chair would like to state that it would be within your province to adopt the recommendations that appear in this report, other than those that have become impossible of adoption because of existing conditions, and a motion of that kind, to that effect, would be entertained.

Moved by Mr. Nitardy and seconded by Mr. Godding that the recommendations numbers 2, 3, 4 and 5 contained in the report of the Voluntary Conference for Drafting a Modern Pharmacy Law be adopted and that the report be referred for publication..

The motion having been regularly made and duly seconded, and the question put, the motion was declared carried.

Chairman Freericks: I wanted to report on the provisions of a Modern Pharmacy Law, but this will have to go over until next year. The last thing

on the program will be the election of officers. I understand this has to be by ballot. At the last session the nominations were closed for that session and further nominations are in order for all of the offices.

Dr. Anderson: I move that the nominations be closed finally and that the Acting Secretary be instructed to cast the ballot for the Section for the election of the officers nominated.

Seconded by Mr. Nitardy.

The motion having been regularly made and duly seconded, and the question put, the same was declared carried.

The Acting Secretary then cast the unanimous ballot of the Section for, Chairman, Frank H. Freericks; Associates, Louis Emanuel, Zada M. Cooper, and C. H. Packard, and for Secretary, R. H. Kuever.

There being no further business before the Section, a motion was made to adjourn, and the same having been duly seconded and the question voted, the Section thereupon adjourned sine die.

BACK-FIRING.

To many who have read the much over-written case of the Chicago infant who recently came into and went out of this world with certain deformities, the question doubtless occurred: What would the followers of Mrs. Eddy do in such a case? Logically the followers of this cult would have done just what happens to have been done by the physician in charge: Nothing. And the result, of course, would have been the same. Possibly because this line of thought is rather obvious, the *Christian Science Monitor* devotes over a column to the case. Under the sonorous title *"Ave Medicus Imperator,"* this journalistic champion of Mrs. Eddy's doctrines belabors the medical profession, charging that "the place of Caesar as a dispenser of life and death is to be taken by the modern physicion," and, further, that "the hospital is to usurp the position of the arena." The article, of course, is wholly in the nature of a back-fire. The poor human mite, whose short but tragic life and equally tragic death have proved such a boon to the sensational newspapers and such a grief to the thoughtful, really "passed over" strictly according to the tenets of Mrs. Eddy's disciples. We assume, naturally, that even the most rabid of that sect would hardly claim that thought-waves, either long or short range, would remedy a congenital deformity. The baby died because "treatment" was "absent."—*Journal A. M. A.*

Scientific Section

Papers Presented at the Sixty-Third Annual Convention

PRINCIPLES UNDERLYING THE USE OF VACCINES, BACTERINS, ANTITOXINS AND IMMUNE SERUMS AS AGENTS FOR THE PREVENTION AND CURE OF INFECTIOUS DISEASES.*

F. E. STEWART, PH. G., M. D., PHAR. D.

This is the first of a series of papers. The second will deal with Diagnostic Reagents and their uses in the diagnosis of infectious diseases. The third will consider the application of biologic products as therapeutic agents.—[EDITOR].

Infectious diseases are caused by the growth and multiplication in the body of bacteria, protozoa, moulds and yeasts. They are combats between lower and higher forms of life according to the general law of struggle for existence constantly going on between all forms of living matter. Closer analysis shows that the battle is between the protoplasm of the conflicting forces, with enzymes as weapons of offense and defense.

Groups of symptoms and phenomena caused by the growth and multiplication of these living organisms and representing the external or visible evidences of their growth and multiplication in the body have, in the past, been considered as diseases, in themselves. These phenomena may be compared to the noise and smoke of battle; the real conflict being between the microbial cells and the body cells. In the prevention and treatment of infectious diseases, we aim our weapons at the combatants, not at the noise and smoke.

The phenomena of recovery from infectious diseases have been investigated and as a result we have a new therapeutics in which modified infective agents and products resulting from artificially immunizing animals are used in treatment.

Bacteria. These one-celled microörganisms, now so well known to bacteriologists, are classed by some authors with the vegetables, others class them with the animals. However, their classification is more of an academic question than one of practical importance. The bacterial cell may be berry-shaped, rod-shaped, or spiral, giving rise to the names coccus (pl. cocci), bacillus (pl. bacilli), and spirillum (pl. spirilla), respectively. The cocci may grow in pairs (diplococci), in bunches like grapes (staphylococci), in chains (streptococci), etc. And their

*Read before the Scientific Section, A. Ph. A., San Francisco, August, 1915.

[1] *Bacterial Diseases*:—Diphtheria, pneumonia, influenza, whooping cough, gonorrhea, etc.
Protozoan Diseases:—Malaria, syphilis, relapsing fever, sleeping sickness, etc.
Mould Diseases:—Aphthae or thrush, pityriasis versicolor, etc.
Yeast Diseases:—As incitants of disease in man yeasts have been much studied since 1894. Prominent in the literature are the contributions of Busse, Gilchrist, Curtis, Ophüls and Zinsser.

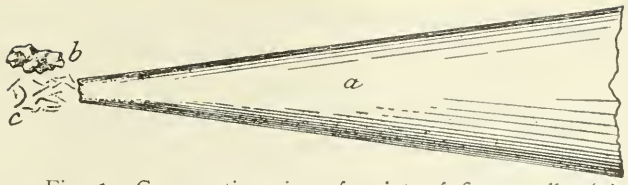


Fig. 1.—Comparative size of point of fine needle (a); bit of dust (b); bacteria (c).

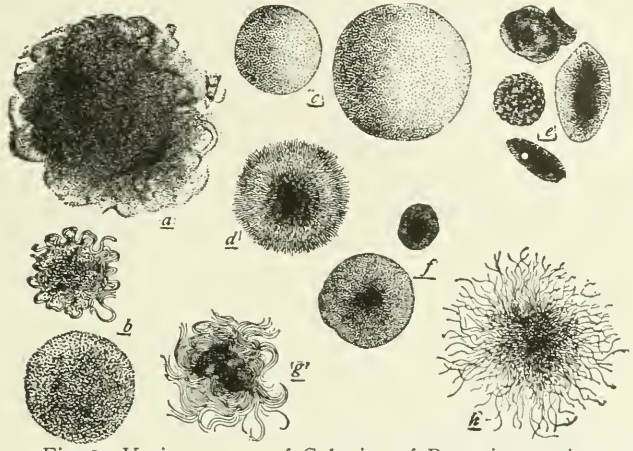


Fig. 2—Various types of Colonies of Bacteria growing on gelatin.

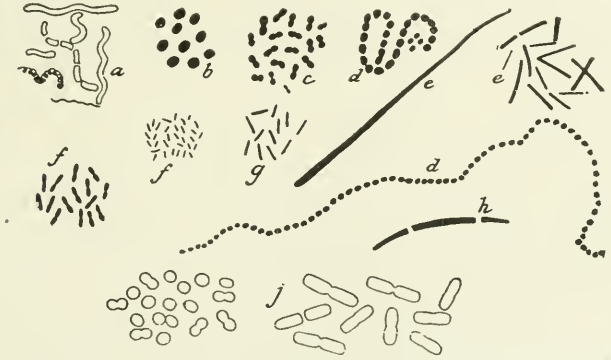


Fig. 3—Shapes of Bacteria. (a) Spirillum; (b) Micrococcus; (c) Diplococcus; (d) Streptococcus; (e-h) rod-shaped bacteria; (i and j) Divisions.

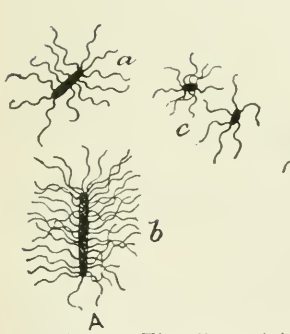


Fig. 4—Flagella. (a) Perutruchic; (b) Lophotrichic; (c) Montrichic.



Fig. 5—Spore Production.

Illustrations from Conn's "Practical Dairy Bacteriology," published by Orange-Judd Co.

cultures may be colored giving such names as aureus, citreus, albus, etc. Their size, rapidity of growth, method of reproduction, sporulation, etc., are important subjects in relation to their method of growth and multiplication in the body as infective agents, but the limits of this paper will not permit detailed discussion and the reader is, therefore, referred to works on bacteriology.

Protozoa. The protozoa are essentially unicellular (one-celled) animals. The individual or "person" in this grade of the animal kingdom is a single cell; and, although we find protozoa which consist of aggregates of cells, yet an examination of the details of their structure and life history establishes the fact that the cohesion of the cells in these aggregates is not an essential feature of the life of the individual protozoon but a secondary and non-essential arrangement.

Yeasts and Moulds. The yeasts or blastomycetes and the moulds or hyphomycetes are closely related organisms, distinguished from each other and from the bacteria by morphological characteristics and methods of growth. The limits of this paper will not permit a detailed description. The vital properties or "functions" of living protoplasm in so far as this study is concerned, are best exhibited by the living protoplasm of the amebae.[2]

The Ameba. The ameba is a protozoan having a simple protoplasmic body with a nucleus and neucleolus and granules. The constant flowing out or extension of an ameba or other mass of protoplasm into irregular processes, called pseudopodia and their subsequent retraction or effacement, is termed *ameboid movement.* In the higher plants and animals the movements of the protoplasm are combined and directed so as to produce effects in relation to the whole organism built up of countless cells. The white corpuscles or leucocytes appear to be masses of free formative protoplasm, having the power of locomotion (ameboid movements) and capable of assuming various shapes.

Under the microscope a pseudopodium is observed to extend and into it the granules stream in constant current until the whole protoplasmic body has changed its location and form. These movements, ameboid movements and granule streaming as manifested by the protozoa, are intimately related to the processes of hunting, seizing, and ingesting food, and of the intercourse of the individuals of a species with one another and their evasion of hostile agencies. The same applies to the movement of cilia and flagella, which subserve the needs of the individual cell of which the moving protoplasm is the main substance.

Plants, Animals and Man.—In a Sense Colonies of Amebae. Plants and animals (including man), while made up of special organs and tissues and cells, yet consist of cell-units which manifest vital phenomena or functions inherent in the protoplasm itself, namely, contractility, irritability and automatism, reception and assimilation of food, metabolism with secretion and excretion, respiration and reproduction, phenomena we accordingly recognize as muscular or nervous, secretory or excretory, respiratory, reproductive and the like.

Yet in these organs and their tissue cells, however specialized to one function only, a residue of all or nearly all the other fundamental properties of protoplasm

[2]The ameba and the foraminfera afford convenient and classical examples of the protoplasm of the lowest animal forms; the white corpuscles of the blood, or leucocytes should also be examined. Vegetable examples are readily obtained from the cells of a growing shoot; while the living cells of *chara*, a genus of cryptogams, and other examples of protoplastic movement, should be observed.

remains and may be developed; and thus those changes which we call "adaptation to environment," and those pathological disturbances we term "disease" are alike provided for.

We thus find the vital functions of protoplasm taking part in the warfare between infective organisms and body cells.

The intracellular digestion of food by these lower forms of life has been contrasted with the "cavitary" or entral digestion of higher animals, that is, the digestion that goes on in the alimentary canal. In the latter, enzyme and acid (or alkalies) are poured out by the cells of the secreting organs and glands into the digestive canal, and digestion is extra-cellular.

The digestive organs and tissues of the higher animals are specialized. The digestive glands of the mouth produce ptyalin, a starch digester; the gastric glands produce pepsin, a protein digester; the pancreas furnish a digestive "juice" containing three enzymes, trypsin, amylopsin, and steapsin, which respectively digest proteins and starch, and split up fats.

The enzymes produced by the protoplasm of bacteria and protozoa are not the products of specialized organs and tissues as is the case with the higher forms of animals, but they are capable of digesting the proteins and carbohydrates which constitute their food. In the same manner the cells of the body are able to digest substances with which they are brought in contact.

The digestion carried on by the body cells not directly related to the alimentary canal and its secretory organs is known as *parenteral* digestion. For example, when protein, living or dead, is introduced into the tissues of an animal or man, the body-cells are stimulated to produce a specific proteolytic enzyme or digestive ferment which digests and destroys it.

What Is Meant by Pathogenicity. The protoplasm of the infective agent, having become a parasite, lives at the expense of the tissues of the host. As stated by Vaughan, the pathogenicity of a bacterium, or its power of producing disease, is dependent upon its ability to grow and multiply in the body tissues. Any microörganism which can grow and multiply in an animal body is pathogenic to that animal. To grow and multiply in the animal body, the invader must convert the proteins of the animal into its own proteins. A foreign protoplasm (bacteria, protozoa, etc.), can grow and multiply in the human body only if the invader is capable of digesting and utilizing the proteins of the body. All living cells grow by means of their own digestive ferments, and these must act upon the pabulum within their reach. If the ferment of the bacterial cell cannot digest and prepare food for the bacterium from the body protein (protoplasm) then the invading bacterial cell dies. If the digestive ferment produced by the body cells is rapidly and thoroughly destructive there is no bacterial development and the organism is innocuous.

Structure of the Protein Molecule. Protoplasm is composed chiefly of protein. According to Vaughan and his co-workers, all true proteins are constructed upon the same general plan, and consist of a central group, keystone or archon, around which are arranged sub-groups. The central group is common alike to all proteins. It is a poison, but not a toxin, that is, it is incapable of stimulating the body cells to produce an antitoxin when introduced into the animal body. Its poisonous properties are due to its powerful affinity for the secondary groups

of other proteins. The secondary group or groups of each protein molecule is specific. The power of the protein to stimulate the body cells to produce a specific proteolytic enzyme resides in the secondary groups.

Typhoid Fever as an Illustration of Infection and Subsequent Immunity[3]. The infective agent of typhoid fever is the typhoid bacillus. It is infective because by means of its digestive ferment it can feed on the proteins of man's body. This means that it can convert man's proteins into typhoid proteins and thus multiply its kind. Moreover, it is not, immediately on its entrance in man's body, destroyed by the ferments of the body cells. Having found admission to the body it proceeds to grow and multiply. This continues through the period of incubation, which in this disease is somewhere about ten days. During this period of incubation there is no effective resistance on the part of the body cells to the growth and multiplication of the foreign protein. During this time the man is not sick, and we conclude therefore that it is not the growth of the foreign protein which *per se* gives rise to the symptoms of typhoid fever. However, during this time the body cells are being prepared for their combat with the foreign protein. This preparation consists of the development in certain of the body cells of a new function, that of elaborating a new and specific ferment which will digest and destroy the foreign protein. When this new ferment begins its action the first symptoms of the disease appear. The active stage of the disease, with its symptoms and the lesions induced, marks the period over which the parenteral digestion of the foreign protein exists. Death may come from the too rapid breaking up of the foreign protein and the consequent liberation of a fatal dose of the protein poison, which is always formed on the disruption of the protein molecule, or it may result from some lesion induced by the products of this disruption, such as perforation and hemorrhage, or it may follow from chronic intoxication and consequent exhaustion. In case of recovery the individual is, for a time at least, immune to the typhoid bacillus because his body cells are now able to elaborate and make immediately effective the specific ferment which destroys the typhoid protein.

To this stimulating action of the secondary group of the protein molecule upon the body cells which causes the development in the body of the man a specific proteolytic enzyme, Vaughan has given the name "protein sensitization." "There is developed in certain body cells a new function, that of elaborating this new ferment."

Phagocytosis. Metchnikoff has demonstrated that those body cells, known as leucocytes, and commonly called white corpuscles of the blood, possess the power of digesting and disposing of foreign proteins when introduced into the animal body. The leucocytes are little masses of free protoplasm, similar to the ameba and capable of ameboid movement. The leucocyte, like the ameba, in feeding, projects a pseudopodium outward until it comes in contact with the food particle, which it now proceeds to engulf, and by means of its enzymes, digest. Metchnikoff teaches that the leucocytes have the power of destroying bacteria invading the body, and on that account gave to these organisms the name "phagocytes," or "cell eaters" (from *phagein*, to eat and *kutos*, *cell*). It is now generally conceded

[3]This illustration is taken from Vaughan's book entitled "Protein Split Products in Relation to Immunity and Disease."

that the tissue cells, as well as the leucocytes, possess the power of phagocytosis. They have, therefore, been fancifully described as "sessile phagocytes."

According to Metchnikoff, the digestive power of the phagocytes is exerted through the agency of enzymes or ferments known as "cytases."

FUNCTION OF THE BODY FLUIDS IN IMMUNITY.

Bacteria may be destroyed by the digestive action of the body fluids into which the enzymes have been discharged, and which therefore possess the same power of destroying bacteria originally characterizing the phagocytes themselves. Serum from the blood of an immunized animal (immune serum) manifests three main specific actions, namely, (a) bactericidal and lysogenic action; (b) opsonic action; (c) agglutination and the closely allied precipitating action. It is, therefore, assumed that these actions are due to certain antibodies. The bactericidal and lysogenic action is assumed to be due to the presence of *bacteriolysin* (*lysis,* to dissolve). Some authors believe that the body fluids also contain *bactericidin,* having the power of killing bacteria without dissolving them. The opsonic action is assumed to be due to *opsonins.* When a small quantity of immune serum is added to a suspension of the corresponding bacterium, the organism becomes agglutinated into clumps and motility is suspended or destroyed. This action is assumed to be due to the presence of *agglutinins.* The immune serum may not only cause agglutination, but when added to the filtrate of a culture of the corresponding bacterium, may produce a cloudiness and afterwards a precipitate. The name *precipitins* has been given to these hypothetical substances.

Antigens and Antibodies. In overcoming the infective agent the body cells of the animal undergoing the immunizing process develops certain protective substances above referred to. Possessed of these protective substances, the animal can subsequently withstand a more severe attack of the same infection and is, therefore, said to be immune. These protective substances are classed under the general head of antibodies, and the substances used for immunization are called *antigens.*

Practically any protein substance may serve as an antigen. Its injection gives rise to specific proteolytic, or digestive ferments, as we have already seen. According to Vaughan, all enzymes are composed of *complement* and *amboceptor.* The specific part of enzyme is the amboceptor. Each kind of protein when introduced into the animal body stimulates the body cells to produce specific amboceptor, the function of which is to prepare the protein for the lytic action of the complement. As already stated, the complement is not specific. It is not increased by the immunizing process. It is practically the same no matter from what animal obtained. It will cause the lysis of any kind of protein, provided the latter is first prepared for lysis by union with its appropriate specific amboceptor. For instance, if egg albumen is used as an antigen, the body cells are stimulated to produce specific proteolytic amboceptor capable of *sensitizing* egg albumin. The same applies to serum albumins and globulins, milk, epithelial cells, vegetable albumin, etc. It also applies to bacteria. Each kind of bacteria requires a specific amboceptor for its digestion. This amboceptor must be produced by the body cells and unite with the antigen (bacterium) before the complement can act upon it and cause *bacteriolysis.*

Stimulins, Opsonins and Bacteriotropins. It has long been taught by Metchnikoff and others that there are certain substances in the body fluids which aid phagocytosis. Metchnikoff regarded them as *stimulins,* or substances that stimulate leucocytes to become more actively phagocytic. On the other hand, Wright, Douglas, Hektoen and others have demonstrated that these substances aid phagocytosis, not by stimulating the leucocytes, but by preparing the bacteria for ingestion and digestion by them. Wright gave the name opsonins to these substances (from the Greek word *posono,* "to prepare food for."). They are also known as *bacteriotropins.* The source of opsonin is unknown. Thermostabile opsonin (opsonin not affected by low heat, 56-58° C.) is increased by artificial immunization and by disease. It is largely of the nature of amboceptor, which is also thermostabile, and increased by the immunizing process. It is, like amboceptor, specific, and is probably produced by the body cells, especially by the local cells at the site of infection. Thermolabile opsonin—largely occurring in normal serum—is, like complement, non-specific, and is not increased by the process of immunization. Complement is also thermolabile.

ACTIVE IMMUNIZATION.

The process of stimulating the body cells to produce antibodies (enzymes) is called *active immunization.* The immunity following disease is an example, but the term is usually applied to artificial immunization.

Vaccination. A vaccine is an infective agent so modified as to prevent its growing and multiplying in the body, but not so changed as to destroy its power as an antigen. When a vaccine is introduced into the body in small doses the body cells react, producing antibodies (enzymes), and a resulting immunity against the corresponding infectious disease, without marked disturbance to the system or danger to life.

Smallpox Vaccine. This is an attenuated living virus consisting of the infective agent of smallpox modified by passage through the cow. The virus in its passage through the cow becomes so modified that it can no longer produce smallpox, but is still able to stimulate the production of the specific antibodies (ferment, or specific amboceptor) against this disease. Centuries before the Christian era the Chinese observed the immunity against a second attack enjoyed by those who had survived smallpox. By inoculation, i. e., artificial transfer of the smallpox virus, they endeavored to check the spread of the disease. The people of eastern countries were also accustomed to expose their children to a mild case of smallpox in order that a similar mild attack might produce immunity against the disease. These practices, however, were not without risk, as this mild disease not infrequently became a virulent one, and it was also found that the disease so produced could be spread as readily as the natural form. It was long known that milkmaids who contracted smallpox from sores on the udder of the cow were immune against smallpox. Edward Jenner in 1796 demonstrated experimentally that when the virus of cowpox is applied to the abraded skin of a human being a trivial affection, since called "vaccinia," results and that this is followed by complete or almost complete immunity to smallpox for a long period of years. Re-vaccination should be practiced after five to seven years to insure a more potent and lasting immunity.

Rabies Vaccine. The work of Jenner was purely empirical. Pasteur laid the foundation of scientific immunology in 1858, 1860, 1863. It was not until 1879 that he made the discovery that light, high and low temperature, and exposure, could so reduce the virulence of an infective agent that while its injection into an animal was practically without danger or ill effect, it could stimulate the mechanism of immunity in the host and produce a lasting protection against infection.

This fact was accidentally discovered by Pasteur when working on chicken cholera. He found on returning from an absence from his laboratory that the cultures of the chicken cholera organism with which he had been experimenting had become innocuous. The far reaching importance of this fact at once impressed him and resulted in his demonstration that a mild form of chicken cholera may be produced by using as antigen an attenuated organism, and that this mild attack would confer immunity against the severe form of the disease. On this discovery is based modern bacterin and serum therapy.

Shortly after this epoch-making discovery Pasteur (1880) startled the world by announcing that rabies resulting from mad dog bite could be prevented by vaccination. The process consists of active immunization with emulsion of the spinal cord of rabid animals (rabbits) reduced in virulence by drying for a certain length of time over caustic potash. The incubation period in rabies is comparatively long, varying from three weeks to perhaps several years, while that of the attenuated virus is relatively short, thus making it possible to administer effective vaccination after the infection of the patient by the bite of the rabid animal.

Bacterial Vaccines or Bacterins. These antigens consist of suspensions or so-called emulsions of pathogenic bacteria, modified by heating them to a temperature sufficient to destroy their viability or securing the same results by antiseptics, but not so altering them as to destroy their power of stimulating the body cells of the vaccinated individual to produce antibodies. The suspension is usually made in physiological salt solution, which should be isotonic with the blood, and they are standardized either by bacterial count or by determining the amount of bacterial products in each cubic centimeter by drying and weighing. They are administered by subcutaneous injection or intravenously, and used either for prophylaxis (antityphoid immunization), or for treatment. The blood serum of the individual subjected to a dose of bacterial vaccine manifests increased opsonic power, that is, power to prepare bacteria, of the same kind injected for ingestion and digestion by the phagocytes.

Stensitized Bacterial Vaccines. When pathogenic bacteria are treated with immune homologous serum, i. e., serum from the blood of an animal immunized against the same kind of bacteria to be used for preparing the vaccine, their viability is so reduced that they become incapable of reproduction yet still potent as antigens. Such bacteria are described as "sensitized." By this method the specific amboceptors contained in the immune serum are made to combine with the bacteria, thus preparing them for the immediate action of complement when introduced into the body of the person to be immunized. The blood serum of the individual subjected to a dose of sensitized bacterial vaccine manifests increased bacteriolytic power. According to Garbat immunity following the injection of

sensitized bacterial vaccine is largely due to increase in "bacteriolysin" rather than to increase in "opsonin."

Sensitized Killed Bacterial Cultures. These products differ from sensitized living bacterial cultures in being absolutely safe in so far as *viability* is concerned. It is believed by some that the use of living sensitized cultures may possibly cause carriers and spread disease. Until this and other important questions are answered in a satisfactory manner the U. S. Government will continue to refuse license for their commercial manufacture.

In explaining the action of sensitized vaccines, Besredka refers to the researches of Garbat and Meyer. These investigators aver that bacteria are typical cells consisting of an external protoplasmic envelope and an internal nuclear portion. When they are disrupted by the action of amboceptor and complement, the outer portion is digested and the inner portion (endotoxin) set free. Both portions are toxic; both give rise to individual immunizing substances by stimulating the tissue cells to produce them. Immunity is, therefore, partly due to the production of endotoxin and partly due to the production of bacteriolysin.

As the explanation of Garbat and Meyer resembles in some particulars the teachings of Vaughan and his associates, I wrote to Professor Vaughan in regard to sensitized vaccines, and asked further information on the subject from his viewpoint. He replied as follows:

UNIVERSITY OF MICHIGAN, ANN ARBOR, Nov. 8, 1915.

Dear Doctor Stewart:

It seems to me that the action of sensitized bacteria compared with the unsensitized bacteria is best explained by my theory. Probably it will be best to first state my theory and then see how it applies to sensitized bacteria. A protein sensitizer or anaphylactogen (called by others antigen) is a protein substance which when injected into animals causes certain body cells to produce a specific proteolytic ferment. This specific ferment digests and destroys its homologous sensitizer or the protein which has caused its development. This ferment, like all other ferments, consists of amboceptor and complement. Now let us apply this to sensitized bacteria. Bacteria, typhoid bacteria for instance, are sensitized by submitting them in vitro to immune serum. These bacteria thus are saturated with their specific amboceptors and when such sensitized bacteria are injected into an animal they are already fitted for complete digestion. In the animal the complement acts upon the prepared bacteria and their digestion is complete. So complete is their digestion that a large part of their poisonous constituents is destroyed and the animal is immunized by the nonpoisonous constituent of the sensitized bacteria. For this reason the animal treated with sensitized typhoid bacteria shows little disturbance, while on the other hand, the animal treated with unsensitized bacteria must elaborate both amboceptor and complement. This takes time, the period is longer, the digestion is less complete, more of the poison is set free, less of the poison is destroyed in the process of digestion, and consequently the life of the animal is placed in greater jeopardy. Garbat and Meyer believe that immunization is secured by the poisonous constituent or constituents of the typhoid bacillus. According to my theory, the poisonous constituent of the typhoid bacillus has nothing to do with the production of immunity or sensitization. Sensitization and immunity are induced by the nonpoisonous part of the typhoid bacillus. Subjecting the typhoid bacillus in vitro to immune serums, in other words sensitizing the bacteria in vitro, prepares the bacteria for digestion, and when introduced into the body they are digested speedily and completely, or so nearly completely that a large part of the poisonous part of the bacterial molecule is destroyed. It seems to me that if the article by Garbat and

Meyer is read with my theory in view, it is confirmatory of that theory. It has been shown by Freidberger, myself, and others, that very small amounts of the protein poison produce an elevation in temperature. Large amounts produce a depression in temperature. Sensitizing with immune serum in vitro prepares these bacteria for ready and complete digestion as soon as they are introduced into the animal body. Therefore, there is less disturbance in the animal body when sensitized bacteria are introduced than when unsensitized bacteria are given. This is the way I look at it.

I don't know whether I have made myself clear on this point or not. I know that I have been able to sensitize animals with the nonpoisonous part of typhoid bacteria. This nonpoisonous part which I have obtained has been secured by a crude way. The nonpoisonous part, which is split off by sensitizing bacteria with immune serum, is a much more efficient preparation than mine. The point that I insist upon is that the sensitizing group in the protein molecule, and this of course means the immunizing group, is not the poisonous group, but is found among the nonpoisonous groups. The poisonous group in all proteins is much the same, physiologically the same, chemically there must be fine differences, while the sensitizing group is not the same in any two kinds of proteins; hence its specificity.

I may be cranky on this subject. I think that the nomenclature of Ehrlich has been wrongly applied to sensitization and to bacterial immunity. The protein poison is not a toxin, it is a poison. It produces no antibody.

V. C. VAUGHAN.

ADVANTAGES OF SENSITIZED OVER NONSENSITIZED BACTERINS.

The following advantages of sensitized over nonsensitized bacterins are noted:

1. As a rule they produce but slight local reaction (inflammation at site of injection). This rule has its exceptions. Occasionally severe local reactions follow their injection. However, this is not as likely to occur when using the sensitized bacterin as when the nonsensitized are employed.

2. They cause no general reaction. This is the rule, but it has exceptions. General reactions are manifested by malaise, increased temperature, etc.

3. They may be given more frequently and in much larger doses than the unsensitized bacterins (every twenty-four to forty-eight hours). Occasionally persons are found who cannot digest larger doses. In such cases the dose should be decreased.

4. The immunizing effect is almost immediate (manifesting itself within from 24 to 48 hours), instead of 9 to 10 days.

5. The course of treatment for immunizing an individual against typhoid fever used by the U. S. Army is to inject 500,000,000 killed typhoid baccilli subcutaneously, to be followed 10 days later by the injection of the second dose (10 million killed bacteria), and after another interval of 10 days by the injection of the third dose (1000 million killed bacteria). The dosage of sensitized typho-bacterin is twice as large, i. e., 1st dose 1000 million, 2d dose 2000 million, 3d dose 2000 million. Intervals 6 to 7 days. In the event of a threatened epidemic the advantages in favor of a quick acting bacterin immunity against typhoid fever are not difficult to realize.

6. According to Besredka, sensitized bacteria give results in very late stages of the disease, when no response is secured from the ordinary bacterins, and even serum treatment is ineffective.[4]

7. Owing to the fact that the specific bacteriolytic amboceptor is already united to the antigen (bacteria), and therefore ready for prompt digestion by the body cells when injected it follows that the body cells are saved from the

[4]Bulletin de l'institut Pasteur, viii, 6, pp. 241-253, Mars, 1910.

effort of producing amboceptor, an effort which the body cells of a patient sick with typhoid fever may be unable to accomplish.

8. There is not the same liability of producing what is called a "negative phase"—the temporary condition sometimes following the injection of an ordinary bacterin owing to the using up of the normal opsonin in the patient's blood, the same being required to prepare the injected bacterin for phagocytosis.

PASSIVE IMMUNITY-SERUM THERAPY.

So called because the body cells of the individual undergoing immunization have no part in producing it. Active immunity is produced in some other animal, usually the horse, and the individual to be passively immunized acquires immunity by receiving injections of immune serum taken from the immunized animal. The use of diphtheria antitoxin to prevent diphtheria (prophylactic immunization), and as a curative agent in its treatment (curative immunization) illustrates the main purposes for which passive immunization is employed.

Although sufficient evidence has not yet accumulated to permit positive statements, it is believed that more than one antibody is usually present in each immune serum, and that the immunity acquired by their employment is due to several antibodies, which, acting together, tend to overcome infection.

As stated by Kolmer[5], "From the practical standpoint, therefore, immune serums may be used to produce two main types of passive immunization, namely:

"1. *Antitoxic immunization*, due to antitoxins opposing the true extra-cellular toxins, as in diphtheria and tetanus (antitoxic immunity).

"2. *Antibacterial immunization*, due mainly to bacteriolysins and bacteriotropins (antibacterial immunity)." Serums containing these antibodies are useful in the treatment of infections due to the meningococcus, pneumococcus, streptococcus, gonococcus, etc.

I am forced to end this paper abruptly to permit its publication in the JOURNAL. It is my intent to continue the subject in subsequent papers.

STABILITY OF PREPARATIONS CONTAINING YELLOW PHOSPHORUS.*

H. ENGELHARDT AND O. E. WINTERS.

In our previous paper entitled the "Estimation of Yellow Phosphorus"[1] read at the Detroit meeting we announced our intention to substitute other copper salts for copper nitrate, which we used in the process suggested.

The tabulated results of this work show quite plainly that no advantage is gained by the use of other salts of copper over the nitrate.

With the exception of those made with copper chloride, the results obtained when employing other copper salts were fairly uniform. Copper chloride is the least appropriate for this purpose, due to the apparent decomposition of the

[5] A Practical Text-book of Infection, Immunity and Specific Therapy, by John Kolmer, M.D., Dr. P.H., Phila. W. B. Saunders Co., 1915.

* Read in Scientific Section A. Ph. A., San Francisco meeting.

[1] Journal A. Ph. A., Apr. 1915, p. 451.

copper compounds, especially copper phosphide, which takes place. Again we have found that the direct copper nitrate method as outlined in our previous paper gives trustworthy results. We also found that it is advisable and important to collect the ammonium-magnesium phosphate in a Gooch crucible, because less wash-liquid is required to remove the excess of magnesia mixture and the danger of dissolving the ammonium-magnesium phosphate is consequently practically eliminated.

APPLICATION OF VARIOUS COPPER SALTS.

2.837 gms. of dried phosphorus was dissolved in 250 cc. of air-free chloroform and 10 cc. of this solution, equal to 0.1135 gms. of phosphorus, was treated with copper nitrate solution directly. The following results were obtained:

.392 gm. $Mg_2P_2O_7$=96.45 per cent of the theoretical amount.
.393 " " =96.7 " " " " "
.400 " " =99.51 " " " " "

The same quantity of the chloroformic phosphorus solution was then treated with copper nitrate solution, the copper phosphide was filtered as outlined in our previous paper and both the nonoxidized phosphorus and the oxidation products were estimated with the following results.

Magnesium pyrophosphate from phosphide	*Magnesium pyrophosphate from filtrate*
.268 gm.=65.94 per cent phosphorus	.117 gm.=28.78 per cent phosphorus
.255 gm.=62.73 per cent phosphorus	.136 gm.=33.46 per cent phosphorus
or combined 94.72 per cent	
96.19 per cent	

The 10 per cent copper nitrate solution was then replaced by a 5 per cent *copper acetate* solution and the following results obtained which agree fairly well with those obtained by the copper nitrate method.

Magnesium pyrophosphate from phosphide	Or combined
.258 gm. = 63.48 per cent phosphorus	93.5 per cent
.257 gm. = 63.23 per cent phosphorus	98.15 per cent
.252 gm. = 62.1 per cent phosphorus	97.72 per cent
Magnesium pyrophosphate from filtrate	
.122 gm. = 30.02 per cent phosphorus	
.142 gm. = 34.92 per cent phosphorus	
.145 gm. = 35.62 per cent phosphorus	

When substituting the 10 percent copper nitrate solution by a 10 percent copper sulphate solution the results obtained showed that a greater oxidation of the copper phosphide takes place during the process than when using the nitrate or acetate.

Magnesium pyrophosphate from phosphide	
.199 gm. = 49.0 per cent phosphorus	
.202 gm. = 49.7 per cent phosphorus	
.215 gm. = 52.9 per cent phosphorus	Or combined
Magnesium pyrophosphate from filtrate	96.4 per cent phosphorus
.192 gm. = 47.4 per cent phosphorus	94.5 per cent phosphorus
.182 gm. = 44.8 per cent phosphorus	97.3 per cent phosphorus
.180 gm. = 44.4 per cent phosphorus	

The oxidation was still more marked when using a 10 percent copper chloride solution.

Magnesium pyrophosphate from phosphide	
.189 gm. = 46.5 per cent phosphorus	
.139 gm. = 34.2 per cent phosphorus	
.054 gm. = 13.3 per cent phosphorus	Or combined 92.4 per cent phosphorus
Magnesium pyrophosphate from filtrate	
.187 gm. = 45.9 per cent phosphorus	84.6 per cent phosphorus
.205 gm. = 50.4 per cent phosphorus	101.3 per cent phosphorus
.359 gm. = 88.0 per cent phosphorus	

These results are absolutely worthless. As yet we have not been able to find out the cause of these discrepancies. We have made several sets of assays under exactly the same conditions but the results obtained were as varying as those reported. When using copper salts other than the chloride the precipitate of the copper phosphide has a black color, while the chloride produces a precipitate which at first is black but which soon changes to brown, the color of copper phosphide generally described in the text-books on chemistry.

STABILITY OF SPIRIT OF PHOSPHORUS.

Since the results obtained with copper sulphate and copper chloride were unsatisfactory, we used only the nitrate and acetate in the estimation of the spirit. The estimation was carried out as given in our previous paper, using 10 cc. of the spirit for the estimation.

The following results were obtained:

Copper nitrate	0.0505 gm.	$Mg_2P_2O_7$	=0.141	per cent phosphorus.
" "	0.050 "	"	=0.1395	" "
" "	0.0508 "	"	=0.142	" "
Copper acetate	0.049 "	"	=0.1368	" "
" "	0.049 "	"	=0.1368	" "

In another series of experiments the oxidation products were not removed by shaking out with water, 10 cc. of the spirit were simply mixed with 25 cc. of chloroform, 40 cc. of water and 20 cc. of copper nitrate and copper acetate solution respectively. We thus obtained the following results:

Copper nitrate	0.065 gm.	$Mg_2P_2O_7$	=0.183	per cent phosphorus.
" "	0.068 "	"	=0.19	" "
" "	0.068 "	"	=0.19	" "
" "	0.0676 "	"	=0.189	" "
		Average	0.188	
Copper acetate	0.068 gm.	$Mg_2P_2O_7$	=0.19	per cent phosphorus.
" "	0.066 "	"	=0.184	" "
" "	0.066 "	"	=0.19	" "
" "	0.069 "	"	=0.196	" "
		Average	0.190	

The results show that about 25 percent of oxidation products are formed when dissolving the phosphorus in the alcohol.

It may be stated that the spirit under examination was prepared with ordinary 95 percent alcohol, the boiling being continued for 12 hours. Upon standing the spirit became cloudy very rapidly and a yellow precipitate was formed.

When applying the copper nitrate method on the same sample of spirit kept at ordinary temperature in small, completely filled bottles at intervals of one month the following results were obtained:

Date of Assay, September 26, 1914.

.0505 gm. $Mg_2P_2O_7$=0.1409 per cent elementary phosphorus.
.0500 " " =0.1395 " " "
.0508 " " =0.1418 " " "
.0650 " " =0.1813 per cent total phosphorus estimated directly.
.0680 " " =0.1897 " " " "
.0680 " " =0.1897 " " " "
0676 " " =0.1886 " " " "

Practically no change within one month.

October 26, 1914

Elementary Phosphorus					*Oxidation Products*				
.0530	gm.	$Mg_2P_2O_7$	0.1479	per cent	.0106	gm.	$Mg_2P_2O_7$	.0296	per cent
.050	"	"	0.1395	"	.0086	"	"	.0240	"

Estimated Directly

.063	gm.	$Mg_2P_2O_7$	0.1758	per cent					
.058	"	"	0.1618	"					

November 23, 1914

.052	gm.	$Mg_2P_2O_7$	0.1415	per cent	.007	gm.	$Mg_2P_2O_7$	.0195	per cent
.053	"	"	0.1479	"	.006	"	"	.0167	"
.0464	"	"	0.1294	"	.005	"	"	.0139	"
.0460	"	"	0.1283	"	.004	"	"	.0112	"

December 29, 1914

.0477	gm.	$Mg_2P_2O_7$	0.1327	per cent	.0041	gm.	$Mg_2P_2O_7$	.0117	per cent
.049	"	"	0.1367	"	.004	"	"	.0112	"

January 25, 1915

.0476	gm.	$Mg_2P_2O_7$	0.1328	per cent	.004	gm.	$Mg_2P_2O_7$	.0112	per cent
.0486	"	"	0.1356	"	.003	"	"	.0084	"

February 28, 1915

.0468	gm.	$Mg_2P_2O_7$	0.1307	per cent	.0060	gm.	$Mg_2P_2O_7$	.016	per cent
.0472	"	"	0.1318	"	.0070	"	"	.0195	"

March 29, 1915

.0472	gm.	$Mg_2P_2O_7$	0.1318	per cent	.012	gm.	$Mg_2P_2O_7$	.0335	per cent
.0480	"	"	0.1340	"					

May 3, 1915

.048	gm.	$Mg_2P_2O_7$	0.134	per cent	.0105	gm.	$Mg_2P_2O_7$	.0293	per cent
.048	"	"	0.134	"	.0105	"	"	.0293	"

June 7, 1915

.047	gm.	$Mg_2P_2O_7$	0.1312	per cent	.004	gm.	$Mg_2P_2O_7$	.0112	per cent
.046	"	"	0.1284	"	.005	"	"	.0139	"

In order to find out whether or not spirit of phosphorus when kept in completely filled bottles in a refrigerator retains the elementary phosphorus still better the following experiments were undertaken:

October 27, 1914

Elementary Phosphorus					*Oxidation Products*				
.049	gm.	$Mg_2P_2O_7$	0.1368	per cent	.009	gm.	$Mg_2P_2O_7$	.0251	per cent
.048	"	"	0.1339	"	.0064	"	"	.0179	"

Total phosphorus .056 gm. $Mg_2P_2O_7$.1536 per cent phosphorus

November 24, 1914

.041	gm.	$Mg_2P_2O_7$	.1144	per cent	.003	gm.	$Mg_2P_2O_7$	.0084	per cent
.044	"	"	.1221	"	.007	"	"	.0195	"
.042	"	"	.1171	"	.004	"	"	.0112	"

December 29, 1914

Elementary Phosphorus					*Oxidation Products*				
.035	gm.	$Mg_2P_2O_7$	.0977	per cent	.005	gm.	$Mg_2P_2O_7$	.0139	per cent
.037	"	"	.1032	"	.005	"	"	.0139	"
.037	"	"	.1032	"	.005	"	"	.0139	"
.035	"	"	.0977	"	.0044	"	"	.0132	"

January 26, 1915

.033	gm.	$Mg_2P_2O_7$	.0921	per cent	.006	gm.	$Mg_2P_2O_7$	.0167	per cent
.033	"	"	.0921	"	.004	"	"	.0112	"
.0332	"	"	.0927	"	.004	"	"	.0112	"
.033	"	"	.0921	"	.004	"	"	.0112	"

February 3, 1915

.034	gm.	$Mg_2P_2O_7$	.0949	per cent	.015	gm.	$Mg_2P_2O_7$	.0293	per cent
.033	"	"	.0921	"	.0115	"	"	.0321	"
.033	"	"	.0921	"	.006	"	"	.0167	"
.034	"	"	.0949	"	.008	"	"	.0223	"

March 30, 1915

.033	gm.	$Mg_2P_2O_7$	0.921	per cent	.009	gm.	$Mg_2P_2O_7$	.0251	per cent
.033	"	"	0.921	"	.010	"	"	.0279	"
.0364	"	"	0.1016	"	.007	"	"	.0195	"

May 7, 1915

.047	gm.	$Mg_2P_2O_7$	.131	per cent	.0055	gm.	$Mg_2P_2O_7$	.0154	per cent
.046	"	"	.128	"	.0040	"	"	.0111	"
.047	"	"	.131	"	.006	"	"	.0167	"
.046	"	"	.131	"	.005	"	"	.0130	"

June 11, 1915

.029	gm.	$Mg_2P_2O_7$	.0810	per cent	.006	gm.	$Mg_2P_2O_7$	.0167	per cent
.028	"	"	.0782	"	.005	"	"	.0130	"
.031	"	"	.0866	"	.004	"	"	.0111	"
.030	"	"	.0838	"	.004	"	"	.0111	"

These results show that spirit of phosphorus when kept in completely filled bottles, protected from light, either at ordinary temperature or in a refrigerator keeps fairly well; they also show that at times a somewhat more rapid deterioration takes place, as explained by comparing results obtained in February and March with those obtained in May. We are at present not in a position to say to what causes such a deterioration can be attributed.

That, however, spirit of phosphorus should be kept in completely filled, preferably amber, bottles is shown by the following experiment. About 300 cc. of spirit was left in a 2500 cc. flint bottle. The spirit which was at first slightly turbid, soon became transparent and after the lapse of about three weeks all the elementary phosphorus had disappeared or in other words had been oxidized.

STABILITY OF PHOSPHORUS PILLS.

The phosphorus pills used for the examination were made from a paste calculated to contain 10 percent of phosphorus and this paste when assayed according to the following process gave the results indicated below.

About .6 gm. of the paste was mixed in a bottle filled with carbonic acid gas with 20 cc. of water and 50 cc. of chloroform both air-free and the mixture

was shaken for about one-half hour. Tragacanth was then added, the mixture shaken again and, after clearing, an aliquot part of the chloroformic solution was treated with copper nitrate in the regular way. The following results were obtained:

.688	gm.	of paste	gave	.245	gm.	$Mg_2P_2O_7$	=9.94	per cent
.418	"	"	"	.145	"	"	=9.9	"
.562	"	"	"	.198	"	"	=9.85	"
.423	"	"	"	.1466	"	"	=9.68	"

For making the pills a 10 percent excess of phosphorus paste was added to the calculated amount, in order to meet the deterioration or volatilization which occur during the manufacturing process. The pills were assayed strictly according to the process given in our previous paper.

Phosphorus Pills 1/50 gr. Coated.

Date of Assay—					
October 2, 1914	0.02024	gm.	$Mg_2P_2O_7$	101.2	per cent
	0.02110	"	"	105.5	"
	0.02116	"	"	105.8	"
November 2, 1914	0.02007	"	"	100.35	"
	0.02078	"	"	103.90	"
	0.02065	"	"	103.25	"
December 1, 1914	0.02039	"	"	101.95	"
	0.02060	"	"	103.00	"
January 7, 1915	0.01993	"	"	99.65	"
February 26, 1915	0.02031	"	"	101.55	"
	0.02038	"	"	101.90	"
March 4, 1915	0.0211	"	"	105.5	"
April 1, 1915	0.0198	"	"	99.0	"
	0.0205	"	"	102.5	"
May 11, 1915	0.0202	"	"	101.0	"
June 15, 1915	0.01946	"	"	97.3	"
	0.01969	"	"	97.45	"

Phosphorus Pills 1/50 gr. Uncoated.

Date of Assay—					
September 30, 1914	0.02073	gm.	$Mg_2P_2O_7$	103.65	per cent
	0.01957	"	"	97.85	"
November 4, 1914	0.02031	"	"	101.55	"
	0.02073	"	"	103.65	"
	0.02053	"	"	102.65	"
December 1, 1914	0.02046	"	"	102.30	"
	0.02075	"	"	103.75	"
January 6, 1915	0.02013	"	"	100.65	"
	0.02059	"	"	102.95	"
February 26, 1915	0.2005	"	"	100.25	"
March 4, 1915	0.019	"	"	98.5	"
	0.0205	"	"	102.5	"
April 1, 1915	0.0199	"	"	99.5	"
	0.0206	"	"	103.00	"
May 11, 1915	0.0199	"	"	99.5	"
June 15, 1915	0.01964	"	"	98.2	"

Phosphorus Pills 1/100. Coated.

Date of Assay—					
October 2, 1914	0.01054	gm.	$Mg_2P_2O_7$	105.4	per cent
	0.01043	"	"	104.3	"
November 2, 1914	0.00949	"	"	94.9	"
	0.00942	"	"	94.2	"
	0.01020	"	"	102.0	"
December 1, 1914	0.01005	"	"	100.0	"
	0.009908	"	"	99.08	"
January 6, 1915	0.01014	"	"	101.4	"
	0.01002	"	"	100.2	"
June 15, 1915	0.00978	"	"	97.8	"
	0.00997	"	"	99.7	"

Phosphorus Pills 1/100 gr. Uncoated.

Date of Assay—					
September 30, 1914	0.01009	gm.	$Mg_2P_2O_7$	100.9	per cent
	0.01036	"	"	103.6	"
November 2, 1914	0.00996	"	"	99.6	"
	0.01017	"	"	101.7	"
December 1, 1914	0.01310	"	"	103.1	"
	0.01021	"	"	102.1	"
January 6, 1915	0.01002	"	"	100.2	"
	0.01013	"	"	101.3	"
June 15, 1915	0.00956	"	"	95.6	"

Phosphorus, Nux Vomica and Damiana Pills, both plain and gelatin coated were then examined. Each pill originally contained 1/100 gr. of phosphorus. The following results were obtained:

Phosphorus, Nux Vomica and Damiana Pills. Uncoated.

Date of Assay—					
December 4, 1914	.008926	gm.	$Mg_2P_2O_7$	89.26	per cent
	.009007	"	"	90.07	"
June 16, 1915	.00843	"	"	84.3	"
	.00832	"	"	83.2	"

Phosphorus, Nux Vomica and Damiana Pills. Coated.

Date of Assay—					
November 11, 1914	.009342	gm.	$Mg_2P_2O_7$	93.42	per cent
	.009491	"	"	94.91	"
December 4, 1914	.009084	"	"	90.84	"
June 16, 1915	.00808	"	"	80.8	"
	.00817	"	"	81.7	"

Although 10 per cent more phosphorus had been added to the pill mass than theoretically required, the pills assayed below the required amount of phosphorus, thus showing that a part of the phosphorus is oxidized during the manufacturing process. It is further shown that a portion of the phosphorus is oxidized on keeping the pills, no matter whether they are coated or uncoated.

The assay of the pills was carried out according to the process outlined in our previous paper with the exception that the shaking of the chloroformic phosphorus solution with the copper nitrate solution was continued for three hours or until the green color of the mixture had acquired a brownish tint due to the formation of copper phosphide. We have found that certain vegetable

matters retard the formation of copper phosphide considerably and unless all the phosphorus has been converted into phosphide the phosphorus cannot be converted into its oxidation products by hydrogen peroxide but will remain as such and appear in the bottle in the form of white fumes.

We also had this experience when determining:

STABILITY OF ELIXIR OF PHOSPHORUS, NUX VOMICA AND DAMIANA.

The elixir was prepared from a spirit of phosphorus which assayed 0.1224 per cent of phosphorus. 280 cc. of this spirit was mixed with 720 cc. of elixir of nux vomica and damiana. The elixir thus prepared should contain theoretically 0.035 per cent of phosphorus, viz.: four times the amount required by the product generally found on the market. The elixir was kept in small completely filled amber bottles, protected from light and at ordinary temperature.

Assays of the Elixir.

Date of Assay—					
November 17, 1914	.026	gm.	$Mg_2P_2O_7$	.02905	per cent
	.024	"	"	.02681	"
	.026	"	"	.02905	"
December 5, 1914	.024	"	"	.02681	"
	.025	"	"	.02794	"
January 5, 1915	.021	"	"	.02346	"
	.0214	"	"	.02391	"
January 30, 1915	.020	"	"	.02235	"
	.021	"	"	.02346	"
March 15, 1915	.017	"	"	.01864	"
	.021	"	"	.02346	"
April 1, 1915	.017	"	"	.01864	"
May 10, 1915	.011	"	"	.01228	"
	.0118	"	"	.01264	"
June 14, 1915	.008	"	"	.0892	"
	.010	"	"	.01116	"

These results show that elixir of phosphorus, nux vomica, and damiana keeps well for about five months, after which time a rather rapid dissipation of the yellow phosphorus takes place.

In summing up we find that preparations containing yellow phosphorus keep fairly well under ordinary conditions. Only those preparations which contain vegetable matter are easily decomposed.

RESEARCH LABORATORY OF SHARP & DOHME.

REMARKS AND DISCUSSIONS.

Dr. Turner: I merely wish to compliment Dr. Engelhardt on his paper and to point out that the question of determining phosphorus in compounds is a very complicated one. Now we have something which will really enable us to determine the amount of phosphorus in these preparations.

Dr. Dohme: I would like to ask Dr. Engelhardt to what extent the results agree with one another in the various determinations.

Dr. Engelhardt: The experiments were made in duplicate and triplicate and the results vary, I should judge, within the limit of 3 per cent. or 5 per cent. Often the variation was even less. In my opinion the results are particularly satisfactory because with other processes the results obtained were far from being concordant, and in some cases, were absolutely unreliable. I believe we have tried all processes recommended up to the present time

for estimating yellow phosphorus in pharmaceutical preparations and especially the process requiring the destruction of the organic matter and oxidation of the phosphorus by the Kjeldahl method. The fact that the results obtained by this method were not at all concordant may be due to a too rapid oxidation of the phosphorus which manifests itself at times by small explosions.

We have found that with the method outlined by us we can get uniform and satisfactory results and when you get results which remain within the 5 per cent limit and taking even the personal equation into consideration within the 8 per cent limit you should be very well satisfied.

A Member: Are these phosphorus compounds, that is, the therapeutic products, pills, etc., used as extensively as they were some years ago? What is the demand?

Dr. Engelhardt: My impression is that we still make rather large quantities of pharmaceutical preparations containing phosphorus, especially those containing in addition to phosphorus, extract of nux vomica and extract of damiana. On account of the instability of phosphorus in elixir of phosphorus, nux vomica and damiana we have quite recently replaced the phosphorus by glycerophosphates. Such a preparation is apparently equally as effective, for we continue to have a great demand for it.

A Member: It is perhaps not germane to the subject, but I should like to ask whether there is any real evidence as to the therapeutic value of either elixir of phosphorus or glycerophosphates?

Dr. Engelhardt: You had better ask the American Medical Association. They claim not.

SEMPERVIRINE FROM GELSEMIUM ROOT*.

A. E. STEVENSON AND L. E. SAYRE.

The authors give a method of separating "Sempervirine" from a mixture of the combined alkaloids of gelsemium root, by means of converting the alkaloid into the nitrate which is quite insoluble in water and practically insoluble in solution containing sodium nitrate. Methods of preparing the free alkaloid and some of its salts, a description of these products, and their reactions with the usual alkaloidal reagents are given. In the second part of the paper the authors describe gelseminine which, they claim, consists of at least two alkaloids. They further suggest a method for separation of the various alkaloids of the root and the results of some preliminary physiological experiments carried out with sempervirine, which have shown that the salt apparently has no *immediate* toxic effect, but its definite toxicity is stated.—(Editor.)

At previous annual meetings of this Association, the progress in the investigation of Gelsemium Root has been contributed. In former papers, the various contributions of different authors have been referred to and, at this time, it is unnecessary to repeat the same. It is the desire of the present authors to record in the proceedings of this Association any results of this investigation.

In the present paper, we desire to report further progress in the separation of the various alkaloids of this interesting drug and will confine ourselves very briefly to the method of separation of the alkaloid sempervirine from the total alkaloids of Gelsemium. This report, taken in connection with former

*Presented to Scientific Section, A. Ph. A., San Francisco.

reports, will reveal consecutive steps which have been taken in this investigation.

A.—The crude mixed alkaloids of Gelsemium weighing 25 grams were dissolved in chloroform and extracted with one percent citric acid until practically all the alkaloid was removed from the extraneous material. The acid liquid was made alkaline with ammonia water and completely extracted with chloroform. The alkaloid was then again extracted from the chloroform using one percent hydrochloric acid. Each successive extraction was tested by adding a few drops of saturated solution of sodium nitrate which precipitates the sempervirine. When no further precipitate was obtained the extracts previously obtained were combined and a saturated solution of sodium nitrate added, drop by drop with stirring, until no further precipitate was obtained. This precipitate consisted of sempervirine nitrate. The alkaloid, as stated in previous papers, forms a nitrate, quite insoluble in water and practically insoluble in solution containing sodium nitrate.

B.—Purification of the Sempervirine Nitrate. The sempervirine nitrate was filtered off and washed free from mother liquor with a weak solution of $NaNO_3$ and the $NaNO_3$ solution removed by washing drop by drop with distilled water. The sempervirine nitrate was washed with distilled water into a beaker and heated on a boiling water bath until it dissolved. The solution was filtered off and the nitrate reprecipitated by adding a few drops of a saturated solution of $NaNO_3$. It was then filtered off and washed as before with weak $NaNO_3$ solution. This process of solution and reprecipitation was repeated three or four times. Finally the sempervirine nitrate was dried on porous plate and recrystallized from hot alcohol from which it separated in yellow needle shaped crystals.

C.—Preparation of the Free Alkaloid. The nitrate was dissolved in hot water, the solution made alkaline with NH_4OH and the alkaloid extracted with $CHCl_3$. The major portion of the $CHCl_3$ was distilled off. On allowing the residue to cool the alkaloid crystallized out in reddish brown needles.

D.—The Hydrochloride, Preparation of. The hydrochloride was prepared from the free alkaloid in a manner analogous to the preparation of the nitrate, the alkaloid being dissolved in one percent HCl and precipitated out by adding saturated solution of NaCl. It was dried on porous plate and separated from the NaCl present by dissolving in alcohol in which it is quite soluble.

It may be obtained in a crystalline form by dissolving in a small amount of absolute alcohol, heating the alcohol solution to boiling and adding 4 or 5 volumes of hot $CHCl_3$. On cooling and standing for some time, the hydrochloride separates out in yellow microscopical needles. The hydrochloride dissolves readily in alcohol and water. It is very slightly soluble in chloroform.

E.—Some Characteristics of the Alkaloid and Its Salts. The free alkaloid, as stated before, crystallizes from chloroform in reddish-brown needles. Its chloroformic solution is very dark in color, ranging from yellow, in very dilute solutions, to a dark reddish-brown, in saturated solutions. It is somewhat soluble in alcohol, very slightly soluble in water, almost insoluble in ether, benzol, and petroleum ether.

It dissolves in concentrated H_2SO_4 with reddish-brown color, the solution giving no change in color on adding a crystal of $K_2Cr_2O_7$. When heated, it fused together at about 220°, but did not melt even when heated to 280°, above which temperature it was not heated. At this temperature, it was in the form of a black mass.

The hydrochloride fused together at 310°, but was not completely melted at this temperature. It was not heated higher than this.

An aqueous solution of the hydrochloride gives the following reactions:

With $NaNO_3$ solution, a yellowish precipitate.
With Mayer's Reagent, a yellow precipitate.
With Wagner's Reagent, a reddish-brown precipitate.
With Tannic Acid solution, a yellowish precipitate.
With Picric Acid solution, a yellow precipitate.

Yellow amorphous precipitates with potassium ferrocyanide and potassium ferricyanide solutions.

With $KCrO_4$ solution, a yellow precipitate.
With platinic chloride, a yellowish-white precipitate.

The hydrochloride may be precipitated from its solution by adding a small amount of sodium chloride solution.

The solution of hydrochloride gives no precipitate with phosphoric, sulphuric, oxalic, tartaric or citric acids.

The percentage of sempervirine in gelsemium is small. About 0.8 gram was obtained from the 25 grams of alkaloidal material which represented the alkaloids from 25 pounds of the drug.

F.—The Filtrate from the Sempervirine Nitrate, together with further acid washings of the $CHCl_3$ solution which did not give a precipitate with $NaNO_3$, were extracted with several successive portions of benzol, using in all about three times the volume of the acid solution. This removed the greater part of the gelsemic acid. The acid liquid was then extracted with several successive portions of $CHCl_3$, using in all about four times the volume of the acid liquid. The chloroform removed the remainder of the gelsemic acid, the remainder of the sempervirine as the hydrochloride and also would undoubtedly remove at least traces of the hydrochlorides of all other alkaloids present, since such a large amount of $CHCl_3$ was used.

G.—The Chloroformic Solution. The chloroformic solution was filtered and the greater part of the $CHCl_3$ distilled off. The remainder was shaken with several small portions of water, until the hydrochlorides of the alkaloids were removed. The residual $CHCl_3$ was rejected. The aqueous solution was evaporated with a small amount of sand (sand being added to facilitate subsequent extraction) at a low temperature to dryness, the residue transferred to a flask and extracted with several successive portions of acetone. Sempervirine hydrochloride, which had not been precipitated with $NaNO_3$, is left with the sand from which it was extracted with alcohol.

The acetone solution was evaporated to dryness at a low temperature and the residue dissolved in water. (Not all of it went into solution.) The filtered solution was treated, drop by drop, with a saturated solution of NaCl. A small quantity of a yellow alkaloidal precipitate was obtained at first, the precipitate gradually becoming whiter. The first portion of the precipitate

was filtered off and the succeeding precipitate produced by NaCl was collected separately. This latter precipitate was dried on porous plate and dissolved in alcohol from which it separated in crystalline form. The crystals were almost colorless, slowly soluble in water and melted at 282° with decomposition.

A small amount of alkaloid hydrochloride remained in solution after saturating with NaCl. The solution was made alkaline with NH_4OH and the alkaloid extracted with $CHCl_3$. On evaporating the $CHCl_3$, a bitter amorphous residue with a pyridine-like odor was obtained. All of these alkaloidal products obtained here were very small in quantity.

H.—Acid Solution which had been Extracted with Benzol and $CHCl_3$. This acid solution was exactly neutralized to litmus with NaOH solution and evaporated at a low temperature. The dry residue was extracted with alcohol leaving behind NaCl and gelsemine hydrochloride, while a small quantity of gelsemine hydrochoride, and all of the gelseminine hydrochloride was dissolved. To remove as much as possible of the gelsemine hydrochloride, part of the alcohol was removed by distillation and the concentrated solution allowed to stand for a few days when a small amount of gelsemine hydrochloride separated out. The solution was filtered off and evaporated with sand at a low temperature. The residue was transferred to a flask and extracted with several successive portions of acetone. A small amount of alkaloidal hydrochloride remained in residue and was not extracted by the acetone.

This residue was dissolved with alcohol and, on evaporation of the alcohol, gave a crystalline hydrochloride. The hydrochloride was dissolved in water and the solution filtered. To the filtrate a saturated solution of NaCl was added which gave a small amount of yellow precipitate. This precipitate was not examined further. On adding more NaCl solution and even after saturating with NaCl, there was no further precipitate, but the hydrochloride of an alkaloid remained in solution. This was precipitated with NH_4OH, the precipitate collected, washed with water and dried. It was redissolved in alcohol, but did not separate in a crystalline form (labeled Alk. A.).

I.—Gelseminine. The acetone solution obtained in "H" was evaporated, the residue dissolved in water and the solution filtered. On adding to the solution a saturated solution of NaCl, there was produced with a small amount of NaCl solution a dark colored precipitate, while on adding more NaCl solution to the filtrate from this a further lighter colored precipitate was formed. After saturating with NaCl, there still remained some alkaloidal hydrochloride in the solution (precipitates labeled, first, *Precipitate with NaCl* and, second, *Precipitate with NaCl,* respectively).

It seems that gelseminine must consist of at least two alkaloids. This is indicated First, by the fact that the hydrochloride of one is more easily salted out from its solution than that of the other, the hydrochloride first separating out being much darker in color than that separated on further addition of NaCl solution. Second, if the free alkaloid be dissolved in a small amount of alcohol and ether* added, a very dark colored alkaloid is precipitated out

*The ether solution corresponds to what we have employed in physiological tests as gelseminine.

while one much lighter in color remains in solution. Neither of these two methods of fractional precipitation gives a sharp separation into two constituents and it could probably only be determined by an ultimate analysis of the two products or by comparison of physiological effects whether these are really two different products. The physiological method would apparently be the better test to use since it would require less material and less work.

SUGGESTED METHOD FOR SEPARATION OF ALKALOIDS OF GELSEMIUM.

A.—Extract Gelsemium with 90 percent alcohol. Evaporate at a low temperature. Add water to precipitate resinous matter and filter. Wash residue with distilled water. Make the combined filtrate and washings alkaline with NH_4OH and extract completely with $CHCl_3$. Filter the combined $CHCl_3$ extracts and distil off the greater part of the $CHCl_3$. Extract the alkaloid from $CHCl_3$ residue with one percent HCl. To the acid washings add a saturated solution of $NaNO_3$ until no further precipitate is formed, avoiding an excess of $NaNO_3$.

NOTES—The saturated solution of $NaNO_3$ need not be added to the whole of the acid washings. Each successive acid washing may be tested with $NaNO_3$ solution until a washing is obtained which does not give a precipitate with $NaNO_3$. The $NaNO_3$ solution need then be added only to the combined washings obtained previous to this washing which does not give a precipitate with $NaNO_3$ solution.

B.—(1) *Purification of the Sempervirine Nitrate.* Wash the nitrate on the filter paper with a 5 percent solution of $NaNO_3$ until free from the mother liquor. Wash the precipitate then drop by drop with distilled water until practically free from $NaNO_3$ solution, rejecting the first portions of the washings, but collecting the succeeding portions. (This collection of succeeding portions is necessary since, as soon as the greater part of the $NaNO_3$ solution is removed, the sempervirine nitrate dissolves to a slight extent). When washed free from $NaNO_3$, transfer the sempervirine nitrate to a beaker and heat with distilled water on a boiling water bath until solution is effected. Filter, add the portion of the washings collected above, and also a few drops of a saturated solution of $NaNO_3$. Filter off the precipitated sempervirine nitrate and proceed as before. Repeat this three or four times. Finally dry the sempervirine nitrate on porous plate and then recrystallize from hot alcohol.

(2) *Preparation of Free Alkaloid from Nitrate.* Dissolve the nitrate in hot water and add NH_4OH to the solution. Extract the alkaloid with $CHCl_3$. Distil off the major portion of the $CHCl_3$ and allow to crystallize.

(3) *Preparation of Hydrochloride from the Alkaloid.* Dissolve the free alkaloid in one percent HCl, filter and add a saturated solution of NaCl. Proceed as under B (1) except that an NaCl solution is used instead of an $NaNO_3$ solution.

C.—Proceed with the extraction as directed under A until the alkaloids are extracted. Combine these washings with the filtrate from the sempervirine nitrate and extract with several portions of benzol, using in all a quantity of benzol equal to about three times the volume of the acid washings. This removes the greater part of the gelsemic acid. Distil off benzol to get acid. Then extract the acid liquid with several portions of $CHCl_3$ using in all

three or four times the volume of the former. This will remove the remainder of the sempervirine as the hydrochloride, together with some other alkaloidal material, also any remaining gelsemic acid. Distil off the greater part of the $CHCl_3$ and shake the residue with several portions of distilled water. This will transfer the hydrochlorides of the alkaloids to the aqueous liquid. Mix the combined aqueous extracts with some sand and evaporate at a low temperature. Extract the residue with acetone. Sempervirine hydrochloride is left behind with the sand from which it may be extracted with alcohol.

The acetone solution may be further treated as above.

D.—The acid liquid which has been extracted with benzol and $CHCl_3$ is made just neutral with NaOH and evaporated to dryness at a low temperature. The residue is treated with alcohol in small amounts which leaves behind NaCl and gelsemine hydrochloride. In solution we have a small amount of gelsemine hydrochloride together with gelseminine hydrochloride and any other alcohol soluble hydrochlorides. This alcoholic solution is evaporated to a small volume and allowed to stand for some time when the major portion of the gelsemine hydrochloride will separate out. Filter, mix the filtrate with sand and evaporate at a low temperature. Extract the residue with acetone. The so-called gelseminine hydrochloride goes into solution while a small amount of alkaloidal material remains in the sand from which it may be extracted with alcohol.

Physiological Test: Thus far no complete pharmacological data has been obtained concerning this alkaloid. It may be stated, however, that 1 cc. of the solution of the hydrochloride containing 0.001 gm. of the salt killed a guinea pig weighing 90 gms. in 48 hours. A mouse weighing about 20 gms. with the same dose died in the same time, the salt having no *immediate* toxic effect.

NOTE: For the crude material containing the mixed alkaloids we are indebted to Messrs. Eli Lilly and Company and for crude and authentic material in working up former papers we are indebted to J. U. Lloyd, Parke, Davis and Company and H. K. Mulford Company. For their generous supply of material we desire to express our thanks.

Toxicity of Sempervirine: A report from the pharmacological laboratory of Parke, Davis & Co., gives the toxicity of Sempervirine as Minimum Lethal Dose = 0.00014 gm. per gram weight of frog. For this report the writer is indebted to Dr. E. M. Houghton.

LEUCOCYTIC EXTRACT—ITS PREPARATION AND USES.*

ARTHUR R. MEINHARD.

It is now a well established fact that one of the chief forms of protection of the animal body to bacterial invasion is through the action of certain of the white blood cells or the so-called phagocytic cells. These cells, which are easily able to wander through the walls of the blood vessels, are drawn by positive chemotactic action to the infected area and act by ingesting the trouble causing bacteria, destroying them and neutralizing their poisons. It is the purpose of this paper to dwell especially upon the nature of these poison neutralizing sub-

* Contributed to the Scientific Section, American Pharmaceutical Association, San Francisco, 1915.

stances in the leucocytes, methods whereby they can be obtained from the lower animals for use in human infections, and their use in medicine.

Bacteria may be divided into two general classes, according to their poison producing powers; first, those which secrete soluble toxins of which the tetanus and diphtheria bacilli are examples, and second, those that do not secrete soluble toxins in which the poison or endotoxin is more or less fixed to the bacterial body. Examples of these are the pneumococcus, meningococcus, and typhoid bacillus.

Curative sera are easily obtained for the first of these two classes of bacteria by the injection into animals of graduated amounts of toxin which results in the formation in the blood of the immunized animal of an anti-toxin. In this way are procured tetanus and diphtheria anti-toxin.

The production of an anti-toxin for this second group of bacteria has not met with any success. The injection of these endo-toxins into an animal results not in the production of an anti-toxin but in the production of bactericidal and bacteriolytic substances.

Immune sera have been prepared for the treatment of streptococcus and pneumococcus infections, but the action of these sera is probably due to the bactericidal powers of the serum and to an increase of immue bodies, the so-called opsonins of Wright or the bacteriotropins which may or may not be the same immune body. These bodies attach themselves to the invading bacteria and render them more susceptible to the action of the leucocytes, and not to anti-toxins in the serum. The use of these sera has not met with as great success as has the use of anti-toxins.

As mentioned above, one method of action of the leucocytes on the bacterial body is through the preparation of the bacteria by the opsonins for ingestion by the leucocytes. The amount of this immune body in the serum controls the extent to which the bacteria are taken up by the leucocytes, destroyed, and their contained poisons neutralized by the ferment termed by Petterson[1] endolysin.

Hiss[2] however speaks of another form of leucocytic action upon bacteria which is independent of the amount of opsonin in the serum. There is a gradual depression of the phagocytic atcion of the leucocytes up to the height of the infection, and then an increase in action as the infection terminates. It was with this theory in view that Hiss[3] made the following statement: "In many diseases we are dealing probably with an immunity a large part of whose mechanism is individually cellular, not only in the sense of phagocystosis and digestion but in the neutralization of poisons given rise to by the disintegration of the bacteria, a mechanism in which the protecting cells must intervene and unaided by bodies in the plasma, neutralize within themselves the poisonous products of the invading microörganisms."

With this hypothesis in view Hiss[4] and later Hiss and Zinsser[5] undertook a series of experiments to see if they could obtain suitable extracts of leucocytes containing these neutralizing bodies in solution for the treatment of various infections, and to study the action of these leucocytic extracts upon different bacteria. Theoretically, such extracts if containing this poison neutralizing substace or endolysin in solution, should when injected into the bodies of human beings or other animals rapidly diffuse through the blood stream and neutralize the toxins or other poisonous substances, in this way com-

ing to the aid of and relieving the leucocytes for the time being and allowing them to form new endolysins within themselves.

The method finally used by Hiss after much experiment for obtaining leucocytic extracts was as follows and is much the same method as is in use today. Rabbits of about 2000 grammes weight were tied down, the thoracic region shaved and sterilized and ten cubic centimeters of aleuronat mixture injected into each pleural cavity, between the intercostal spaces, care being taken to avoid puncturing the lungs. The aleuronat mixture was prepared by dissolving 3% starch and 5% aleuronat in cold meat infusion broth then boiling over a free flame for five minutes and finally filling into large test tubes and sterilizing in an autoclave. At the end of 18 to 24 hours the injected animals were killed, the pleural cavities opened, and the contained cloudy fluid consisting of serum, leucocytes and some erythrocytes, put into sterile centrifuge tubes and centrifuged at high speed until the supernatant serum was clear and then this serum was poured off. The leucocytes were then extracted in distilled water in an incubator for six or eight hours, then the extract examined bacteriologically for sterility and if sterile was used.

The first experiments of Hiss were on rabbits injected with large doses of staphylococcus. That the strain used was virulent was shown by the death in every case of the animals used as controls, while the other animals which were given small doses of leucocytic extract at intervals of one to five hours after the injetcion of the bacteria either completely recovered or lived for much longer period of time than did the control animals.

Later, further experiments were carried on by Hiss and Zinsser[6] on rabbits, using pneumococcus, typhoid bacilli, and meningococcus. Here the results were about the same as mentioned above, and further, some of the animals recovered when leucocytic extract was not given until 24 hours after a dose of bacteria had been given, large enough to kill the control animals. In these experiments was shown beautifully the resulting drop in temperature after an injection of leucocytic extract showing a neutralization of the poisons.

In view of these successful experiments it was thought advisable to try leucocytic extract upon human beings. It was first tried on 24 people suffering from meningococcus infection. Most of these cases were of the severe type or came under treatment late in the disease when the infection had brought about a state of grave toxæmia, and great emaciation. Two of these cases left the hospital before treatment was fully established, fourteen were discharged as cured and eight died, which calculated in percentages gives 63.6% cured and 36.4% fatal. The injections of leucocytic extract resulted in an improvement of the symptoms depending upon the central nervous system, and vomiting, delirium, stupor and hyperæsthesia were either greatly diminished or disappeared after one or two injections of from five to twenty-five cc. of the extract. There was also a marked reduction in the temperatures.

Seven cases of lobar pneumonia were also treated with the extract. Here there was a recovery of 100% of the cases treated. Here also there was the characteristic drop in temperature, and a change for the better in the subjective symptoms.

Later eleven cases of staphylococcus infection were treated by the same authors[7] with splendid results. Eight of these were cases of chronic furun-

culosis which had lasted in spite of surgical and dietetic treatment for periods of from a few months to some years. In all but one of these cases there was a complete cure made, while in three acute cases treated the same results followed.

Floyd and Lucas[8] reported the use of leucocytic extract in forty cases of pneumonia with a mortality of 12% while in a series of twenty-five cases not treated with leucocytic extract the mortality was more than doubled.

Lambert[9] treated a number of cases, most of them being erysipelas, with results which in his opinion warranted further trials.

Meinhard[10] in experiments upon thirty-nine rabbits and using four times the dose of pneumococcus necessary to kill these animals showed a mortality for the control animals not treated with leucocytic extract of nearly 100%, with recovery of almost 100% for treated animals, although some of these animals did not receive the extract until nearly forty-eight hours after the initial injection of pneumococcus. In these experiments was noted the typical fall of temperature and increase of appetite following the injections of the extract. A small amount of preservative was used for the first time in these experiments and shown to be of no harm to the potency of the extract. A further improvement was also made in the extract by adding a strong solution of sodium chloride to the extracted leucocytes, enough of this salt solution being added to make the extract of physiological salt solution strength. This was done as it had been shown that when the watery solution of the extract was injected it was very painful, while injections of physiological salt solution were not.

Reynolds[11] reporting a series of nine cases of pneumonia with 100% recoveries remarks: "A complete description of these cases represents a severe form of pneumonia running a full course with moderate temperature curve, scarcely noticeable delirium, comparative freedom from toxic effects on the kidneys, and terminating by crisis at the usual time."

Besides these cases reported leucocytic extract has been used with great success on the Pacific Coast for the treatment of lobar pneumonia but as yet many of these cases have not been reported.

Reviewing these cases it is easy to see that leucocytic extract is of use in neutralizing bacterial poisons in the animal body as evidenced by the fall in temperature, general lessening of toxic symptoms and decrease of central nervous system symptoms. It also in neutralizing these poisons gives the leucocytes a chance to recuperate and form new endolysins.

PALO ALTO, CALIFORNIA, June, 1915.

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COLOR REACTIONS*.

E. A. RUDDIMAN.

The author presents reasons for variations in color reactions and refers to defective vision of individuals as one of the dangers for wrong conclusions from color tests.—[EDITOR]

Some years ago the writer made a compilation of color tests of thirty-five alkaloids and eighteen other organic compounds. In doing so it soon became evident that authorities differed widely in the statement of the color produced by a given reagent on a given compound. Recently I have been checking over these tests and have come to the conclusion that the following conditions will account for the variation.

1. There is a great difference in eye-sight and in the power to distinguish colors and shades of colors. What looks like a certain color to one person will resemble another color to a different observer. This defect in some people amounts almost if not entirely to color blindness.

2. There is no recognized standard adopted by chemists with which to compare colors. A certain color can be called a violet-red or a red-violet and both be correct. It is difficult to distinguish the shades, for instance, as they pass from yellow through orange to brown and it is still more difficult to describe them so that another person will catch them. It is to be regretted that there seems to be no convenient standard available for small laboratories so that one writer in describing a color could call it by the name and number of the standard color with which it agrees. The only book of which the writer knows gives about 4000 shades and costs $8.00. A few charts with perhaps 100 to 200 colors would be of great use, provided the colors could be made permanent.

3. The impurities occurring in alkaloids and other compounds will account for some variation. Principles as obtained from drugs and preparations in analytical work are frequently contaminated with foreign matter or are mixtures of several principles, as in case of sabadilla or pomegranate alkaloids. These impurities may modify the color, entirely cover it up, or destroy it. In some cases, as with digitalis glucosides or aconite alkaloids, manufacturers put up different compounds under identical names. Moreover, some chemicals change on keeping and give different results, as apomorphine and apocodeine.

4. Reagents sometimes have impurities in them which modify the colors, as iron or nitric acid in sulphuric acid.

5. Several reagents are made up with sulphuric acid as the solvent. Sulphuric acid being so hygroscopic, it will contain variable amounts of water. If the container of such a reagent is opened frequently for a week, enough water may be absorbed so that no color is obtained when there should be one. Reagents, like Froehde's formaldehyde in sulphuric acid, or ammonium selenite in sulphuric acid should be made up frequently.

*Presented to Scientific Section, A. Ph. A., San Francisco Meeting.

6. The variation in strength of reagents may give different results. Some workers in making up Froehde's reagent use 0.05 gm., others 0.1 gm. up as high as 1.0 gm. for every 10 cc. of sulphuric acid.

7. The actual amount taken of the compound being tested, the amount of the reagent applied, and the proportion of reagent to the compound in certain cases cause a variation. Occasionally where the weight of the compound is directed, it is so much larger than it is possible to get in commercial analysis, the test is of but little value.

8. The order of mixing, whether the reagent is added to the compound or the compound to the reagent, which is in excess, may cause some variation.

9. On adding a reagent the color produced may be permanent, or it may change slowly requiring several minutes or even hours, or it may change very rapidly. The amount of substance being tested will often cause a variation in the time required for the change. Different workers may catch these colors at different stages of change. In analytical work it is impossible to use the same amount of substance each time or as the original test called for.

10. Some tests require the application of heat. The degree of heat and the rapidity with which it is applied in some cases causes a variation.

Since we must depend so largely on color tests for the identification of alkaloids and some other organic compounds, it is unfortunate that so many factors must be considered. To eliminate these as far as possible I would suggest to those who report results from color reagents: That they test the reagents used; that they state the strength of the reagent; that the reagent be added to the compound being tested, or if any other order be followed, it be so stated; that the amount of substance being tested be small, approximating what might be expected in making an analytical examination; that the amount of reagent added be one or two drops from a small stirring rod or dropper, unless otherwise stated; that if heat is to be used, the mixture of substance and reagent be placed on a bath in which the water is already boiling; that the name of the manufacturer of the alkaloid be given, where there is any doubt as to its purity.

ESTIMATION OF ATOXYL.*

H. ENGELHARDT AND O. E. WINTERS.

Quite recently we have had occasion to examine tablets for the amount of atoxyl present. Several methods for estimating atoxyl have been proposed and in order to find out the most reliable one the following assay methods were tried.

I—Sulphurous acid method.[1]

II—The method proposed by Norton and Koch for estimating arsenic in presence of organic matter in a modified form.[2]

III—The method of the German Pharmacopœia.

IV—Method of the German Pharmacopœia modified.[3]

* Read in Scientific Section A. Ph. A., San Francisco meeting.

[1] Puckner and Clark (Journ. Amer. Med. Assn. 1907, p. 1011).

[2] Ibid. Norton and Koch (Jour. Amer. Chem. Soc. 1905, p. 1247).

[3] Rupp and Lehman (Apoth. Zeit. 1911, p. 203).

V—W. Dullière's method.[4]

VI—Bougeault's hypophosphite method.[5]

The methods are carried out as follows:

Method I—A weighed quantity of atoxyl is placed in a strong flask of about 150 cc. capacity, 50 cc. of a freshly prepared saturated solution of sulphur dioxide added, and the flask stoppered with a sound cork tied down firmly. The flask and contents are heated in a water-bath for one hour, allowed to cool, the contents transferred to an Erlenmeyer flask and evaporated on a water-bath until all sulphur dioxide is expelled. After cooling the solution is made nearly neutral with sodium hydroxide, 2 gms. sodium bicarbonate added and the arsenic titrated with N/10 iodine V.S. using starch as an indicator.

When applying the method to a sample of atoxyl the following results were obtained:

Method I—26.58 per cent arsenic
22.61 " "
25.70 " "
25.60 " "

Method II—A weighed quantity of atoxyl is placed in a Kjeldahl flask and digested with 20 cc. of concentrated sulphuric acid until clear and nearly colorless. The mixture is transferred to a flask, using about 100 cc. of water to complete the transfer, made neutral with sodium hydroxide, 2 gms. sodium bicarbonate added and the arsenic titrated with N/10 iodine V.S.

The following results were obtained:

Method II—24.7 per cent arsenic
24.5 " "

This method is rather tedious and cumbersome. It takes almost six hours to oxidize the atoxyl.

Method III—.2 gm. of atoxyl is mixed in a flask with 10 cc. of sulphuric acid and one cc. of fuming nitric acid and the mixture heated to boiling and boiled for one hour. After cooling two successive portions of each 50 cc. of water are carefully added and each portion is again removed by boiling. The residue is then diluted with 10 cc. of water, allowed to cool and mixed with 2 gms. of potassium iodide and 5 cc. of water, and finally sufficient water is added to dissolve any precipitate formed. After allowing the mixtures to stand for one half hour the iodine is titrated with N/10 sodium thiosulphate solution, each cubic centimeter of the latter corresponding to .003748 gms. of arsenic.

The following results were obtained:

Method III—27.3 per cent arsenic
27.18 " "
26.80 " "

Method IV—.2 gm. of atoxyl is mixed in a 200 cc. flask with 10 cc. of concentrated sulphuric acid and the mixture heated on a water-bath at about 70°. One gram of crystallized potassium permanganate is then added in small portion shaking well after the addition of each portion, additional permanganate being added only when the evolution of gas has ceased. To the mixture, drop by drop 5 to 10 cc. of hydrogen peroxide solution is added until the brown color has disappeared and the solution has become limpid: The liquid is diluted with

[4] W. Dullière (Journ. Pharm. et Chim. 1912, p. 567).
[5] Bougeault (Journ. pharm. et chim. 1903, p. 97 and 1907, p. 13).

20 cc. of water, boiled 10 to 15 minutes and again diluted with 50 cc. of water. After cooling 2 gms. of potassium iodide is added, the mixture allowed to stand in a well-closed flask for one hour and the liberated iodine titrated in the usual way with N/10 sodium thiosulphate solution. The results obtained were the following:

Method IV—26.98 per cent arsenic
26.98 " "
26.98 " "
27.0 " "
27.0 " "
27.0 " "

Method V—.5 gm. of atoxyl is dissolved in 25 cc. of water, 20 cc. of N/10 silver nitrate solution are added and then sufficient water to make 50 cc. The liquid is mixed thoroughly and filtered. 25 cc. of the filtrate are mixed with ferric alum solution and a few drops of nitric acid and the excess of the silver nitrate is titrated back by ammonium sulphocyanide solution. The number of cubic centimeters of silver nitrate solution multiplied by .0075 would represent the amount of arsenic, if the silver atoxyl were completely insoluble in water. Since, however, this is not the case, the portion soluble in water should be taken into consideration and for this purpose .9 cc. should be added to the total amount of silver nitrate solution after subtracting the amount of sulphocyanide solution used for retitration.

The results were as follows:

Method V—25.91 per cent arsenic
25.94 " "
27.24 " "
27.39 " "
27.39 " "

Method VI—Atoxyl when treated with hypophosphorous acid in the cold is polymerized. This polymeric product is oxidzed by iodine to amino-phenylarsenic acid. The reducing agent is obtained by dissolving 20 gms. of sodium hypophosphite in 20 cc. of water, adding to the solution 200 cc. of hydrochloric acid (1.17) and decanting the clear liquid from the separated sodium chloride. .15 to .2 gm. of atoxyl is dissolved in 1 or 2 cc. of water, the solution mixed with 15 to 20 cc. of the reducing agent and allowed to stand for 24 hours. The mixture is diluted with 15 to 20 cc. of water, the precipitate separated by filtration, washed well with diluted hydrochloric acid and is then treated for one-quarter hour with an excess of N/10 iodine solution. The excess of iodine is titrated back with N/10 sodium thiosulphate. We obtained the following results:

Method VI—37.5 per cent arsenic
28.0 " "
17.26 " "
21.56 " "

These results show that Method VI is almost worthless. When filtering and washing the yellow precipitate produced with hypophosphorous acid, at times a great amount of the precipitate goes through the filter.

We found that the modification of the method of the German Pharmacopœia works very well and gives satisfactory results.

The above figures further show that the salt used for the experiments which had been kept for about one year in a partly filled bottle, probably had lost some of its water of crytallization and contained only about two molecules of water.

Atoxyl with 3 molecules of water contains 25.59 percent of arsenic, with 2 molecules of water 27.3 percent of arsenic.

Considering the toxic character of atoxyl, great care should be taken in analyzing the product and arranging the dose according to the amount of arsenic.

It is interesting to note the varying composition of atoxyl in regard to water given in the literature. Thus Ehrlich and Bertheim[6] report 4 molecules. Bechamp[7] gives atoxyl with 5 molecules of water and when recrystallized from water with 6 molecules. When, however, recrystallized from an aqueous-alcoholic liquid the salt crystallized with only 2 molecules. Fourneau[8] claims that atoxyl crystallizes with 5 molecules and that it loses all the water but two molecules when exposed to the air. Moore, Nierenstein and Todd[9] report 3 molecules of water of crystallization.

We then examined tablets of different grainage both by the method of the German Pharmacopœia and its modification and obtained the following results:

German Pharmacopœia.	German Pharmacopœia modified.
1/3 gr. 0.3114 gr.= 93.4 per cent	0.323 gr.= 96.9 per cent 0.3126 " = 93.7 "
1 gr. 0.993 " = 99.3 "	0.977 " = 97.9 " 1.0006 " =100.06 "
3 gr. 2.83 " = 94.3 "	2.79 " = 93 "
5 gr. 5.05 " =101 "	4.9 " = 98 " 4.99 " = 99.9 "

The calculation was based on atoxyl containing 3 molecules of water of crystallization.

Although this paper does not bring out anything new, we thought it might be interesing to compile the various methods offered for estimating atoxyl and scattered throughout the literature and give our experience with these methods. So far all experiments with estimating atoxyl in pills and tablets containing also Blaud's mass have failed, but we hope to report on a reliable method in the near future. The large amount of iron in the combination (5 grains Blaud's mass and 1/3 grain atoxyl) greatly disturbs the estimation.

ANALYTICAL LABORATORY OF SHARP & DOHME.

DISCUSSION.

Dr. Dohme: I would like to ask whether any steps were taken to determine whether the tested atoxyl contained varying amounts of water of crystallization or not?

Dr. Engelhardt: The atoxyl which was taken for the estimation was an old sample which contained about two molecules of water of crystallization. We expect to continue the experiments with atoxyl containing varying amounts of water of crystallization in connection with the determination of atoxyl in the presence of Blaud's mass.

[6] Berl. klin. Woch. 1901, 282.
[7] Compt. rend. 411, 1172.
[8] Journ. pharm. et chim. 1907, 530.
[9] Biochem. Journ. 1907, 324.

TINCTURES*.

WILBUR L. SCOVILLE.

The following paper presents a comparison of tinctures made by percolation of drugs and by diluting fluidextracts. A purpose of the work undertaken was to determine the relative stability of the two classes of tinctures.—[EDITOR].

In the fall of 1912 a series of tinctures was made in order to ascertain what differences, if any, could be observed between a tincture prepared by the official process from the drug and one made by diluting the corresponding fluidextract with the proper menstruum.

Forty-six of the Pharmacopoeial tinctures were made by the official process, in lots of 500 cc. to 2000 cc. each, according to the quantities which would be needed in making subsequent tests. The drugs were taken from stock and were all of good quality, though no special selection was made in any case, and the official process was carefully followed in making the tinctures. At the same time a line of the same tinctures was made by diluting the corresponding fluidextracts according to directions on the labels, the fluidextracts also being taken from stock without special selection in any case.

It is at once apparent that since different lots of drug of the same kind vary in strength, in soluble extractive, and to some extent in color, that the two corresponding tinctures would not be absolutely comparable because the fluidextract used was made from a different lot of drug than the official tincture. But the purpose of the investigation was not to see how closely the tinctures cold be made to compare by the two methods, but to note such differences as might be found under ordinary commercial conditions.

When the tinctures were finished each was tested for specific gravity, alcohol strength, dry extractive and the standardized tinctures were assayed for alkaloidal strength. A comparison of the color and brilliancy of each pair of tinctures was also made.

The tinctures were stored in amber glass bottles in a diffused light, and under the ordinary temperature changes of a working laboratory. The bottles were all full at first, but as tests were made some of each was taken out and the bottle re-stoppered, leaving increasingly voluminous air-spaces above the liquids. At the end of the two years from half to seven-eights of each tincture had been removed.

The extractive-estimations and alkaloidal assays were repeated at the end of the first year, and all the tests at the end of the second year. The results are shown in the following table:

*Read before Scientific Section, A. Ph. A., San Francisco Meeting.

Drug	Tinct.	Spec. Grav. 1912	Spec. Grav. 1914	Alcohol % 1912	Alcohol % 1914	Dry Extractive 1912	Dry Extractive 1913	Dry Extractive 1914	Alkaloid Str. 1912	Alkaloid Str. 1913	Alkaloid Str. 1914	Colors	Physical Appear.
Aconite	U. S. P.	.8980	.8970	65.3	66.2	1.76	1.68	1.70	.045	.045	.045	Same	vy. sl. ppt.
	Fld.	.8970	.8969	68.0	67.4	2.80	2.77	2.80	.045	.045	.045		Clear.
Aloes	U. S. P.	.9810	.9810	42.9	43.3	13.6	13.6	13.4				Same	ppt. heav. than fld.
	Fld.	.9768	.9760	39.2	41.8	10.9	10.8	10.8					Mod. ppt.
Aloes and Myrrh.	U. S. P.	.9200	.9224	65.1	66.1	17.9	12.1	12.0				Same	Much ppt.
	Fld.	.9290	.9309	63.9	62.8	17.8	12.2	12.5					Much ppt.
Arnica Flors	U. S. P.	.9354	.9337	45.0	45.8	4.58	4.60	4.56				Sl. darker	Sl. ppt.
	Fld.	.9272	.9267	46.6	46.5	3.26	3.20	3.22					Sl. ppt.
Asafoetida	U. S. P.	.8350	.8350	89.9	89.3	6.70	6.55	6.50				Lighter	Sl. ppt.
	Fld.	.8486	.8482	85.1	85.7	8.95	8.92	8.94					Sl. ppt.
Belladonna Leaf.	U. S. P.	.9464	.9457	48.1	46.5	3.03	2.88	2.88	.034	.0345	.035	Dk. brown	Cons. ppt.
	Fld.	.8846	.8847	71.9	71.6	1.35	1.31	1.32	.030	.031	.029	Dp. Green	Sl. ppt.
Benzoin	U. S. P.	.8724	.8732	81.6	80.1	17.8	17.7	17.8				Same	Clear.
	Fld.	.8600	.8592	83.4	82.7	10.5	10.5	10.5					Vy. sl. ppt.
Benzoin Comp.	U. S. P.	.8840	.8848	77.9	76.3	20.0	19.4	18.8				Same	Sl. ppt.
	Fld.	.8842	.8846	77.4	75.9	18.8	18.8	18.9					Sl. ppt.
Calendula	U. S. P.	.8264	.8260	91.6	90.8	4.40	4.50	4.40				Darker	Clear.
	Fld.	.8234	.8227	93.0	92.0	2.20	2.20	2.20					Vy. sl. ppt.
Calumba	U. S. P.	.9268	.9295	56.1	55.3	3.1	3.1	3.1				Sl. lighter	Sl. ppt.
	Fld.	.9134	.9133	60.8	60.3	2.5	2.5	2.5					Sl. ppt.
Cannabis Ind.	U. S. P.	.8178	.8182	93.3	92.3	1.46	1.40	1.42				Red-brown	Vy. sl. ppt.
	Fld.	.8144	.8140	94.1	93.3	1.36	1.37	1.36				Dp. green	Clear.
Capsicum	U. S. P.	.8332	.8330	88.0	87.4	2.8	2.8	2.8				Sl. darker	Vy. sl. ppt.
	Fld.	.8290	.8288	89.7	89.6	1.7	1.7	1.7					Clear.
Cimicifuga	U. S. P.	.8204	.8200	91.3	91.8	1.30	1.26	1.32				Yel.-br.	Clear.
	Fld.	.8254	.8247	91.7	90.6	1.32	1.34	1.32				Lt. Brown	Mod. ppt.
Cinchona	U. S. P.	.9272	.9260	61.8	62.7	10.9	10.8	10.4	.528	.509	.485	Same	Much ppt.
	Fld.	.9318	.9272	62.0	61.4	13.9	13.7	13.7	.850	.750	.720		Much ppt.
Cinchona Comp.	U. S. P.	.9394	.9392	60.1	60.7	14.4	14.2	12.8	1.06	1.038	1.037	Same	Much ppt.
	Fld.	.9104	.9082	71.3	70.8	12.8	12.5	11.2	0.476	0.473	0.450		Much ppt.
Cinnamon	U. S. P.	.9246	.9247	61.9	61.7	10.1	9.8	9.8				Darker	Sl. ppt.
	Fld.	.9180	.9185	62.5	62.8	8.9	8.7	8.7					Clear
Colchicum Sd	U. S. P.	.9176	.9187	57.0	56.5	1.21	1.22	1.22	.040	.040	.040	Same.	Vy. sl. ppt.
	Fld.	.9200	.9208	54.8	54.2	0.63	0.62	0.63	.040	.040	.040		Clear.
Gambir Comp.	U. S. P.	.9546	.9548	44.5	44.4	4.55	4.6	4.6				Same	Clear.
	Fld.	.9524	.9524	46.1	45.8	5.55	4.5	4.5					Clear.
Gelsemium	U. S. P.	.9100	.9093	61.7	61.0	1.85	1.80	1.88	.047	.047	.043	Sl. darker	Sl. ppt.
	Fld.	.9132	.9128	60.0	59.4	1.47	1.45	1.44	.045	.047	.042		Vy. sl. ppt.
Gentian	U. S. P.	.9306	.9308	56.2	54.8	4.37	4.44	4.42				Sl. lighter	Sl. ppt.
Comp.	Fld.	.9300	.9295	55.1	55.6	4.33	4.35	4.38					Sl. ppt.
Ginger	U. S. P.	.8174	.8180	93.3	93.0	0.82	0.82	0.90				Sl. lighter	Clear.
	Fld.	.8178	.8175	92.0	91.7	0.84	0.85	0.90					Clear.
Guaiac	U. S P.	.8880	.8898	81.8	80.1	22.1	21.2	21.1				Dk. brown	Mod. ppt.
	Fld.	.8780	.8806	81.6	79.7	18.5	18.2	18 2				Red-brown	Vy. sl. ppt.
Ammon Guaiac	U. S. P.	.9648	.9650	54.8	54.0	24.2	23.6	22.4				Same	Heavy ppt.
	Fld.	.9390	.9456	60.4	59.2	18.8	18.7	18.75					Less ppt.
Hydrastis	U. S. P.	.9235	.9223	60.3	60.2	5.1	5.2	5.0	0.47	0.39	0.29	Same	Mod. ppt.
	Fld.	.9272	.9265	58.5	58.8	5.3	5.3	5.4	0.38	0.37	0.36		Sl. ppt.
Hyoscyamus	U. S. P.	.9456	.9457	47.0	46.8	2.82	2.83	2.90	.0070	.0071	.0072	Red-brown	Mod. ppt.
	Fld.	.9356	.9377	48.6	49.1	1.65	1.60	1.64	.0055	.0055	.0056	Dp. green	Sl. ppt.
Krameria	U S. P.	.9524	.9554	44.4	44.3	4.47	4.40	4.50				Same	Mod. ppt.
	Fld.	.9560	.9584	43.6	43.6	5.2	5.3	5.3					
Lavender Comp.	U. S. P.	.8834	.8920	71.4	69.2	0.90	0.90	0.92				Lighter	Clear.
	Fld.	.8830	.8830	71.7	71.3	0.65	0.66	0.67					Clear.
Lobelia	U. S. P.	.9460	.9462	46.7	45.3	2.28	2.32	2.32				Sl. lighter	Mod. ppt.
	Fld.	.9468	.9465	46.8	45.8	2.88	2.88	2.90					Sl. ppt.
Myrrh	U. S. P.	.8380	.8410	87.0	86.8	7.6	7.5	7.4				Cons. light.	Clear.
	Fld.	.8310	.8310	90.0	90.2	5.7	5.8	5.8					Clear.
Nux Vomica	U. S. P.	.8850	.8840	72.0	71.6	1.5	1.4	1.4	.098	.097	.079	Sl. lighter	Sl. ppt.
	Fld.	.8842	.8845	72.9	70.8	1.2	1.1	1.1	.100	.099	.090		Clear .
Opium	U. S. P.	.9618	.9615	44.8	43.0	7.9	6.9	6.9	1.21	1.20	1.21	Same	Mod. ppt.
	Fld.	.9554	.9552	44.5	43.6	4.5	4.5	4.5	1.25	1.25	1.25		Mod. ppt.
Camphorated Opium.	U. S. P.	.9492	.9490	43.5	44.0	4.5	4.4	4.5				Same	Clear.
	Fld.	.9445	.9443	47.0	46.8	4.5	4.5	4.5					Clear.
Orange, Bitter.	U. S. P.	.9390	.9412	55.5	56.4	6.48	6.44	6.47				Same	Sl. ppt.
	Fld.	.9316	.9320	54.5	55.1	4.96	4.98	4.90					Less ppt.
Physostigma	U. S. P.	.8142	.8148	94.7	93.7	0.32	0.29	0.30	.0143	.0106	.0077	Reddish	Vy. sl. ppt.
	Fld.	.8134	.8135	94.8	94.2	0.20	0.19	0.20	.0146	.0140	.0125	Greenish	Clear.
Pyrethrum	U. S. P.	.8188	.8185	92.8	92.1	1.16	1.20	1.10				Sl. lighter	Clear.
	Fld.	.8216	.8215	91.9	92.1	1.48	1.50	1.40					Mod. ppt.
Quillaja	U. S. P.	.9806	.9810	28.5	30.0	5.01	4.99	5.00				Darker	Heavy ppt.
	Fld.	.9750	.9748	30.7	29.9	4.24	4.16	4.18					Mod. ppt.
Rhubarb	U. S. P.	.9960	.9964	44.0	44.1	20.2	19.9	20.2				Same	Cons. ppt.
	Fld.	.9860	.9863	43.7	43.1	17.3	17.3	17.4					Sl. ppt.
Arom, Rhubarb.	U. S. P.	1.003	1.014	42.3	42.1	21.5	21.1	21.1				Same	Sl. ppt.
	Fld.	1.015	1.004	42.3	41.8	21.4	21.6	21.4					Cons, ppt.
Sanguinaria	U. S. P.	.9314	.9322	54.3	57.4	3.37	3.36	3.35				Darker	Cons. ppt.
	Fld.	.9174	.9192	53.4	56.0	1.57	1.55	1.56					Cons. ppt.
Serpentaria	U. S. P.	.9112	.8972	61.7	60.4	2.40	2.52	2.50				Same	Sl. ppt.
	Fld.	.9110	.8960	60.1	60.7	1.32	1.41	1.36					Clear.
Squill	U. S. P.	.9040	.9041	70.2	69.1	6.6	6.2	6.2				Same	Sl. ppt.
	Fld.	.8900	.8922	68.7	68.5	2.4	2.3	2.35					Clear.
Stramonium Lf.	U. S. P.	.9246	.9362	47.1	46.9	2.48	2.45	2.50	.025	.025	.024	Red-brown	Cons. ppt.
	Fld.	.9262	.9365	48.2	48.2	1.56	1.53	1.50	.0245	.0245	.0238	Dk green	Mod. ppt.
Tolu	U. S. P.	.8790	.8795	79.2	79.2	18.0	17.8	17.8				Sl. lighter	Clear.
	Fld.	.8880	.8890	76.8	76.0	17.9	16.9	16.9					Vy. sl. ppt.
Valerian	U. S. P.	.8844	.8850	70.8	70.9	1.67	1.67	1.68				Sl. lighter	Clear.
	Fld.	.8882	.8878	72.1	71.6	2.40	2.42	2.42					Clear.
Ammon. Valerian.	U. S. P.	.9066	.9056	65.8	65.7	4.20	4.20	4.26				Same	Mod. ppt.
	Fld.	.9026	.9012	65.4	65.0	2.70	2.70	2.71					Mod. ppt.
Veratrum	U. S. P.	.8190	.8186	94.1	92.9	1.32	1.34	1.34	.063	.063	.063	Same	Clear.
	Fld.	.8154	.8153	94.1	92.9	0.75	0.76	0.75	.063	.072	.071		Clear.

The specific gravities were taken the first time with a 50 cc. pycnometer on an ordinary prescription balance, and the second time a 100 cc. pyconometer was used on the same balance. The gravities are thus approximate only.

Alcohol estimations were made by diluting one part of the tincture with two parts of water and distilling two parts. The alcohol was then calculated from the specific gravity of the distillate. When volatile oils or other volatile substances are present in a tincture, these will come over in varying quantities, depending upon the rate of distillation and the amount distilled. This affects the specific gravity and consequently the results, and a variation of one percent on different estimations is within the ordinary limits of error. Hence it is not considered that any actual change in alcohol strength occurred in the two years unless the difference is decided.

In the greater number of instances the second estimation shows results slightly lower than the first, which may indicate a tendency to loss in alcohol strength, but in no instance is the difference great enough to draw positive conclusions, and there are numerous instances of reverse results.

When marked precipitation has occurred the second results are often higher than the first, as might be expected, but here again the differences are too small to be important.

The only instance of marked difference between the two tinctures of a pair is in the case of Tincture of Belladonna. The official tincture is made with a menstruum of diluted alcohol while the fluidextract is made with a menstruum of about 75 percent alcohol. In making the tincture, the fluidextract was diluted with this stronger menstruum since it causes less precipitation than would diluted alcohol. In the other cases the difference between the menstruum for the fluidextract and that for the tincture is less marked, and clear tinctures are obtained by the use of the official tincture-menstruum for diluting.

Dry extractives were obtained by evaporating 5 cc. of the tincture in a small copper evaporating dish, having a capacity of about 10 cc. Evaporation was conducted on a sand-bath heated by a normal-pressure steam coil, and was continued over night, or 15 to 16 hours. Different pipettes were used each time, and the variations in these probably will account for the slight discrepancies which may be noted in the results.

It will be observed that changes in extractive usually correspond to precipitation, but not always. It is probable that in some instances oxidation occurs to an appreciable extent.

In the case of the standardized (alkaloidal) tinctures, and also with tinctures of cannabis indica, and squill, which were made from physiologically standardized fluidextracts, the extractives indicate only the physical condition of the tinctures at the beginning and end of the tests.

As a standard of the strength or value of a tincture the amount of extractive is only partially satisfactory, since the ratio of extractive to activity is not constant in any case. For those tinctures which cannot be assayed for active principle it affords the only test we have, in many instances. That it may be deceitful, however, is shown in the fact that of the two tinctures of capsicum, the one containing the less extractive is decidedly the more pungent, hence presumably the more active.

Of the 30 tinctures for which no better method of comparison was found, seventeen show the U. S. P. tincture to contain the larger proportion of extractive at the end of two years, six contain a smaller proportion, and seven are practically equal.

There is no suggestion in these results that certain classes of tinctures tend to run above or below normal when made from fluidextracts. For instance, of the resinous tinctures, Benzoin, Guaiac, Ammoniated Guaiac, Myrrh and Tolu are higher in the U. S. P. tinctures, while Benzoin Compound and Ginger are about equal and Asafoetida and Aloes and Myrrh are below. Of the cathartic tinctures the U. S. P. Aloes and Rhubarb are higher while Aloes and Myrrh is lower and Aromatic Rhubarb is about equal.

It will also be noticed that the U. S. P. tinctures tend to precipitate more than the others, and that at the end of a year the two tinctures are more nearly equal than when freshly made.

The alkaloidal tinctures disclose two unexpected changes, namely the loss in strength of the tinctures of Nux Vomica and of Hydrastis. The fluidextracts of these two drugs have been shown to be permanent, but the loss in strength of the tinctures is unmistakable. In each instance the U. S. P. tincture has lost more than the tincture made from the fluidextract, and the loss is greater during the second year, but each tincture has lost. The assays were repeated in each instance, so that these cannot be questioned. The U. S. P. tinctures have precipitated, but the others are so nearly clear that the loss in strength does not appear to be due to this cause.

The tinctures of Physostigma have also deteriorated, but this was more to be expected since the stability of Physostigma preparations has previously been questioned.

The U. S. P. tincture has lost half of its original strength and has precipitated some, while the other tincture has lost much less and remains clear.

The Cinchona tinctures have all lost in strength, and have also precipitated badly. It has previously been shown that precipitation in galenical preparations of Cinchona carries down some of the alkaloids, so this result was anticipated.

The other alkaloidal tinctures show no material loss in strength in two years.

With regard to color, tinctures made by the different methods in most instances show no more differences in color than would be expected from different lots of drugs. Where a difference is noted in the table, the difference is usually slight and would not be observed except by comparison. There are, however, five notable exceptions:—the tinctures of Belladonna, Hyoscyamus, Stramonium, Cannabis Indica and Physostigma can be easily distinguished as to source by color alone. In the first four, the U. S. P. preparations all have a brownish color with little or no tint of green, while the tinctures made from the fluidextracts are all bright green in color with no trace of red or brown. This cannot be accounted for by differences in menstruum, (unless possibly in the case of Belladonna) and it is not easy to understand. The U. S. P. tinctures when first made had a decidedly greenish color, but lost it on standing. Why the others did not change also is not understood

Much less difference is observed in the two tinctures of Physostigma, yet even here there is a marked difference in tint.

In the other cases any difference observable is one of shade rather than of tint. The differences in the tinctures of Asafoetida, Calendula, Myrrh, Quillaja and (perhaps) Guaiac is marked enough so that they might be noticed by a patient, but in the rest of the cases a comparison is necessary.

As might be expected, precipitation most often occurs in the U. S. P. tinctures, and so far as could be judged by the eye, most of it occurred during the first year. However, the table shows that tinctures will often precipitate when the corresponding fluidextracts do not. This is in accordance with the general observation that concentrated solutions are usually more stable than dilute.

Conclusions: On the whole the tinctures made from fluidextracts compare very favorably with those made direct from the drugs. In the case of the standardized tinctures, the strength is necessarily the same, and the stability is fully as good, if not better.

The non-standardized tinctures leave more to the judgment because we have no definite standards for comparison, but it is probable that there is no more difference between those made by the two methods than there would be between different tinctures made by the same method with different lots of drugs.

One of the main purposes of this investigation was to ascertain if tinctures from fluidextracts are as stable as those made direct from the drugs. This question is answered satisfactorily. The results show a greater rather than a less stability.

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ABSTRACT OF DISCUSSION.

Dr. Asher: I would like to ask Professor Scoville whether in diluting these tinctures the same menstruum was used, or if a menstruum was used equivalent to U. S. P. strength. What was the alcoholic strength of the menstruum employed?

Prof. Scoville: In the case of belladonna it was diluted with the same menstruum as the fluidextract. I cannot say definitely in every case, but in most cases the dilution was made with the menstruum for the tincture, but as a rule there is very little difference. The difference in menstrua of tinctures and fluidextracts is very much less than it used to be. They are getting to be more and more uniform. The next Pharmacopoeia will make them still more uniform.

Mr. Lackenbach: The dispensing pharmacist, particularly in the smaller communities, has always been timid about making tinctures from fluidextracts. He would do it almost invariably, but in an underhanded way, thinking it was not right to do so. In some cases it has been carried to extremes, for instance in the preparation of tincture of digitalis from the fluidextract. But according to Mr. Scoville's paper it would seem that the dispensing pharmacist is justified in using the fluidextracts, especially the standardized fluidextracts. I think that would be a great relief to the pharmacists, especially in the smaller communities, who do not have occasion to make large batches of tinctures, and the fluidextracts sent out by the large pharmaceutical houses are very convenient.

Dr. Turner: It may be stated that in the case of tinctures prepared from fluidextracts which contain alkaloids there should not be any difference. In making the fluidextracts the drug is exhausted, so it no longer contains any alkaloid. Tinctures prepared from these must be just as active as the ones which are prepared by percolation directly from the drug. It is interesting to note that Professor Hatcher in his paper read recently before the New York Branch of this Association, gave illustrations of tinctures made from drugs as well as fluidextracts wherein he showed that there was no variation in the products.

Mr. Lackenbach: I think there must be an exception in the case of digitalis because the alcoholic menstruum will remove the principles that are not desired in the diuretic effect of

the drug. It seems to me rather reprehensible to use fluidextract of digitalis in preparing a tincture.

Dr. Arny: Ten years ago if we had heard Professor Scoville make that statement in regard to tinctures, I would have been ready to fight him. Dr. Hatcher in his little book on Materia Medica, published ten years ago, stated that the infusion of digitalis from the fluidextract was scarcely short of criminal, and he got up at the meeting of the New York Branch and stated that the physiological tests now showed that the two were identical. That being the case, I think we must revise our Pharmacopoeia as well as our Materia Medica.

Dr. Wulling: This discussion merely emphasizes the fact that we are not sufficiently qualified to determine the value of the drug unless we test it in more than one way, and the physiological test of drugs has compelled many of us to change our views.

THE ESTIMATION OF MORPHINE IN PILLS AND TABLETS.

H. W. JONES.

The author reviews various methods proposed for extracting morphine with immiscible solvents. The method of estimation described depends on the conversion of morphine into diacetyl morphine and elimination of the diluents employed in making pills and tablets.

The assay of pills and tablets containing morphine or its salts presents certain difficulties because of the comparatively slight solubility of the alkaloid in any of the immiscible solvents ordinarily used. Of the simple solvents, amyl alcohol is the only one which dissolves morphine to any extent and this to so small a degree as to preclude its use where accurate results are desired. In case the morphine is present as a salt, it is always possible to estimate the acid radical but in the case of the sulphate at least, it has been the writer's experience that this procedure leads to high results.

Various compound solvents have been suggested, among which may be mentioned phenylethyl alcohol-benzol, methyl alchohol-benzol, methyl alchohol-chloroform, ethyl alcohol-chloroform and isobutyl alcohol-chloroform, all of which have been used with varying degrees of success. It is not the purpose of this paper to discuss the merits of these different solvents further than to mention that a mixture of one part alcohol and two parts chloroform by volume, as suggested by Williams[1], has been used in this laboratory for the extraction of morphine with excellent results. We have modified slightly the method as described by Williams, using sodium bicarbonate instead of ammonia to liberate the alkaloid. By introducing this modification we have been able to obtain more concordant results, verifying the findings of Puckner..[2]

The object of this paper is to describe a method devised by me and which in my hands has given very good results. The principle of this method is the conversion of the morphine into an acetyl derivative, extraction with chloroform, and subsequent titration with standard acid. As morphine is most commonly used as the sulphate, this salt was used in the investigation. It was

* Presented in Scientific Section A. Ph. A., San Francisco meeting.

[1] A paper presented at the meeting of the American Chemical Society, Washington, D. C., December, 1911. See American Journal Pharmacy, 86, 308.

[2] Journal American Chemical Society, 23 (1901), 470.

first necessary to determine the purity of the sample used, which was done as follows:

One gm. morphine sulphate treated with $BaCl_2$ yielded 0.3129 gm. $BaSO_4$ equivalent to 1.016 gm. morphine sulphate or 101.6 percent; 0.2 gm. morphine sulphate dissolved in water, made alkaline with $NaHCO_3$ and extracted with 5 portions of alcohol-chloroform (1:2). After removing the solvent the residue consumed 5.31 cc. N/10 H_2SO_4 equivalent to 0.19989 gm. morphine sulphate or 99.99 percent. In order to determine if codeine was present in appreciable amounts, 1 gm. of the morphine sulphate was dissolved in water made alkaline with KOH, and extracted three times with chloroform. The chloroform, after filtering through MgO to remove traces of alkali, was distilled off and the residue on titrating consumed 0.25 cc. N/10 H_2SO_4 equivalent in 0.975 percent codeine sulphate. For the purpose of this investigation, the sample was therefore considered as 100 percent pure.

Not to burden the paper with a description of the various experiments made, suffice it to say that the following procedure was finally hit upon: 0.2 gm. morphine sulphate was placed in a clean, dry 120 cc. Erlenmeyer together with 0.1 gm. anhydrous sodium acetate and 3 cc. acetic anhydride. The flask was then fitted with a condensing tube and heated on a steam bath for one hour. The mixture was diluted with 25 cc. of water and the flask rotated until complete solution was effected. The liquid was then transferred to a separator, made slightly alkaline to litmus with ammonia, and extracted with 4 portions of chloroform, after which the chloroform was distilled from the combined extracts, the residue dissolved in 6 cc. N/10 H_2SO_4 and the excess acid titrated with N/100 KOH using cochineal as indicator. By this method the following results were obtained:

1. 5.3 cc. N/10 H_2SO_4 consumed=0.1995 gm. Morphine Sulphate=99.7 percent.
2. 5.32 cc. N/10 H_2SO_4 consumed=0.2 gm. Morphine Sulphate=100 percent.

It will be understood that, although titrating acetyl morphine the factor to be used is that for morphine sulphate, i. e.,—

1 cc. N/10 Acid=.03764 gm. morphine sulphate.

As a further check on the accuracy of the method, a sample of morphine alkaloid, found by titration to be 100 percent pure, was treated in the same manner with the following results:

1. 0.15 gm. morphine taken required 4.99 cc. N/10 H_2SO_4=0.1497 gm. morphine=99.8 percent.
2. 0.15 gm. morphine taken required 4.97 cc. N/10 H_2SO_4=0.1491 gm. morphine=99.4 percent.

Having established in this manner that the conversion of the morphine into the acetyl derivative is quantitative, the method was then tried out on a number of pills and tablets to determine if it was applicable in a practical way. Here a new difficulty arose. Pills and tablets as a rule, contain considerable quantities of starch or milk sugar or both of these substances, and the action of acetic anhydride upon them produces acetyl starch or acetyl lactose, which compounds are soluble in chloroform and if carried through with the acetyl morphine, will obscure the end-point so that the titration becomes unreliable. To obviate this difficulty the following procedure was adopted.

Place a number of pills or tablets equivalent to 3 grains of morphine sulphate in a clean dry 120 cc. Erlenmeyer flask, add 0.1 gm. anhydrous sodium acetate and 4 cc. acetic anhydride. Fit the flask with a condensing tube and heat for one hour on a steam bath. (In the case of pills, coated or uncoated, it is usually necessary, after heating 10 or 15 minutes, to remove the condensing tube and with a stirring-rod disintegrate the pills, afterwards rinsing off the tip of the rod with a few drops of acetic anhydride and then continuing the heating for the balance of the hour.) Dilute the liquid in the flask with 25 cc. of water and rotate until solution seems to be effected. The acetyl compounds of starch or milk sugar being insoluble, will settle on the sides of the flask. Pour the solution into a separator and rinse the flask with two small portions of water, then with two portions of 15 cc. each of chloroform, and finally with two more portions of water, adding all these rinsing to the separator. (It is necessary to rinse the flask with chloroform in order to remove the acetyl starch or acetyl lactose which may hold some of the acetyl morphine.) Place a piece of litmus in the separator and add ammonia water until the liquid is slightly alkaline. Then shake for two minutes and when the liquids have separated, draw off the chloroform through a pledget of cotton into another separator. Repeat the extraction with choloroform three more times, drawing the chloroform extracts into the second separator. Then extract the combined chloroformic liquids with first, 20 cc 10 percent H_2SO_4; second, 10 cc. 10 percent H_2SO_4 and 10 cc. water, and finally with 5 cc. 10 percent H_2SO_4 and 15 cc. water. Combine the aqueous extracts in another separator, make slightly alkaline with ammonia, and extract four times with chloroform. Draw the chloroformic extracts into a flask and distill off the chloroform on a steam bath. Dissolve the residue in 6 cc. N/10 H_2SO_4 and titrate the excess of acid with N/100 KOH using cochineal as indicator.

Below are given some of the results obtained by applying this method to pills and tablets of morphine sulphate:

Pill or Tablet.	Grains Morphine Sulph. by Acetylization.	Grains Morphine Sulph. by Alcohol-Chloroform.
G. C. Pill ¼ gr.	0.239	0.24
G. C. Pill ¼ gr.	0.241	0.246
G. C. Pill ½ gr.	0.498	0.49
G. C. Pill ½ gr.	0.397	0.4
T. T. ¼ gr.	0.237	0.24
H. T. ½ gr.	0.511	0.519
H. T. ¼ gr.	0.231	0.237
H. V. T. 1 gr.	0.985	0.983

It will be seen that the method gives accurate results, and while it offers no particular advantages over the direct-extraction methods, I have found it useful as an alternative when a check assay is desired. A determination may be run in about two hours, and no troublesome emulsions are experienced. On the other hand, its field is limited, as it can be applied only to dry mixtures. The presence of moisture would of course inhibit the acetylization process.

Laboratory of The Wm. S. Merrell Chemical Company, Cincinnati, Ohio

Editorial

E. G. EBERLE, Editor..... 63 Clinton Building, Columbus, Ohio

THE NEW HOME OF THE JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

WHILE it will make little or no difference, practically, to our readers where the publication office of the Journal of the American Pharmaceutical Association is located, the subject was given careful consideration at the San Francisco meeting of the Association, resulting in instructions that the Committee on Publication decide the location and the committee was given power to act.

The question was discussed from every advantageous viewpoint for the Association and resolved itself largely into one of finance. The vote finally resulted unanimously for Philadelphia, the city around which, with its sister cities of the east, New York, Boston and Baltimore, the early history of the American Pharmaceutical Association is centered. Quite a number of other cities, in a helpful spirit, offered a home for the editorial office and throughout exhibited a desire to consider the interests of the Association paramount. The offices will be located in the rooms of the Philadelphia Drug Exchange, Bourse Building. While the change means more to the Editor than anyone else, for reasons that need not be cited, he cheerfully accepts the decision, because his expressed desire has been to be of service to the Association, believing that the interests of the organization deserve first consideration.

The prosperity and success of the Journal means much to the Association, and every member should contribute such assistance as he can render. First, enlarged membership strengthens the Association numerically and financially and insures more efficient and better service to pharmacy. Everyone can render assistance along these lines; there is hardly anyone who, if the desire is sufficiently strong, cannot secure at least one new member for the Association. This will also help the Journal.

There is another way that each member can exert an influence. The Journal only accepts advertising that can be endorsed. It is extremely doubtful that any other kind will ever be found in the Journal, but if this should occur, it is the duty of the members to advise the Committee on Publication, and they can be assured of prompt action. Therefore, your patronage of *your* patrons in the Journal should be forthcoming; you will have an opportunity, at least, of letting advertising patrons know of your appreciation of their business. Apprise them of the fact that you have read their message in the Journal. This much encouragement everyone can give. Some can persuade others to advertise and such assistance will be highly appreciated; and by contributing to the income of the Journal the expense of publication will be reduced—and it will make further improvement in the Journal possible.

Many schools of pharmacy patronize the pages of the Journal throughout the

year, others during a few months. The revenues and the possibilities of schools differ, and hence we have no desire to praise one above the other. This comment may be made, however, that the American Pharmaceutical Association is an ardent supporter of the schools, it has largely made them possible; at any rate, this organization is engaged in the same mission, namely, to elevate pharmacy, so that even if the returns from an advertisement amounted to little directly, there is an indirect value, traceable in many directions. We hope the coöperative spirit will become more evident. We are thankful to the schools that have favored the Journal and solicit the support of all the others.

After the minutes and papers of the several Sections of the Association have been printed, there will be need of contributions, and these are acceptable now. The Journal is desirous to coöperate with the Branches of the A. Ph. A. in every way and contributors of articles are invited to send in their papers as early as possible, and when discussions have brought out a valuable point these should accompany them. The Editor takes this opportunity of thanking the secretaries for their promptness and good reports. The situation has not been convenient, but when the Journal is located in its new home, there will be no cause for complaint, if such existed.

Finally, the Editor, and he doubtless can speak for the Association, desires to thank the members of the Association in Columbus, the Midland Publishing Company, Professor George B. Kauffman and Miss Anna G. Bagley for the helpfulness and courtesies, which they have always extended. While the Stoneman Press Company performed its duties under contract, it has throughout evidenced an active and commendable interest in the publication of the Journal.

E. G. E.

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A DIFFERENCE OF OPINION STIMULATES PROGRESS.

A STAUNCH and loyal member of the American Pharmaceutical Association gave us the substance of a letter the other day, which he had received from another good friend, in which the latter apologized for differing in opinion with the former. The thoughtful answer of the former has prompted this brief editorial.

One of the greatest and most beneficent aids to progress in our Association and in every other activity, is the fact that we do not think alike about everything, provided of course, that discussion is not for contention or dispute alone, but prompted by a sincere purpose or conviction.

We should have definite opinions about things, and if they are of sufficient importance, or we truly believe them to be, then we should stand stout-heartedly by such opinions and bring them to a conclusion in real accomplishment. Many have brilliant thoughts, splendid plans, but if they are not fostered until they develop into serviceable results, they may be hurtful, rather than beneficial.

If nobody disagreed with us or everybody agreed with us, then we would soon become lethargic, or if so wonderfully adept, a superabundance of duties would be consigned to us. If a well-balanced, enthusiastic member does not think as another, who has made a conscientious study and analysis of the subject, then defects, if any, will be pointed out and thereby the proposition is

perfected or the conclusions proven to be sound and applicable for the intended purpose—both are helped by the discussion and the benefits will probably reach others or the Association in general.

Not only should we be thankful that everyone does not think as we do on all subjects, but we should encourage thorough investigation of plans and purposes intended for adoption by the Association or those now in operation. E. G. E.

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THE RETURN OF ALLIUM.

MANY of those who participated in the revision of the Pharmacopœia and by their vote excluded quite a number of drugs, will doubtless wonder if not quite a few of these will be reinstated in the practice of medicine, now that the scarcity of some drugs has become very pronounced. A drug milling firm, in this business for many years, during the past month sold out their interests because the supply of drugs was too limited for profitable business.

Without specific references at hand, we are not in position to give historical data relative to the use of garlic as a remedial agent, at any rate as far back as 1600 the juice of garlic was employed to prevent and cure the suppuration of wounds, and its many other curative properties were extolled as far back as we have authentic records.

The Revision Committee of 1900, without a strong dissenting voice excluded the drug, but now the medical profession will have to give respectful attention to garlic, for its efficiency is vouched for by the London "Lancet" on the testimony of several eminent London physicians and the reports from the Paddington Infirmary in London, field hospitals in France and elsewhere.

The rediscovery is credited to a peasant woman of France, who cared for many wounded soldiers and with such remarkable results that her treatment was investigated by army surgeons and the discarded garlic has deservedly won its return to the materia medica.

An investigation is in order and perhaps the near relative, Allium Cepa, may possess medicinal virtues as much alike as the odor which strengthens their relationship. On the battlefields of Europe, many of the old household remedies are being largely employed, in most instances by compelling necessity. This much, however, may be said, that after the termination of the hostilities there will be many interesting reports from field hospitals, that will furnish abundant material for research. E. G. E.

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IS PELLAGRA A SOCIAL OR MEDICAL PROBLEM?

IT IS not in our province to discuss diseases or even therapeutics, but if pellagra presents a social problem according to the conclusions of Dr. Goldberger, which have the indorsement of the Public Health Service, then a brief reference may not be out of place in these pages.

The Southern Medical Association met in Dallas last month, and the subject of pellagra was an important one. Not only were interesting papers dealing with the dreaded plague read before the Convention, but quite a number of unfortunates were present at the clinics held during the week in several of the

hospitals and at Baylor Medical College. Although the disease has been known in this country less than ten years, it has become one of the most industrious agents of death, especially in the South. While in other southern states pellagra is more prevalent, the number of cases in Texas is placed in the neighborhood of 35,000. It therefore deserves all the study that is being given to it, and in which we as citizens, if not otherwise, are interested.

Dr. Roberts of Atlanta, Ga., stated that it requires a very sanguine mind to say anything optimistic about pellagra and compared the futile attempts of medical men to acquire some knowledge as to what the disease really is and how to treat it, with the chasing of a rainbow by children. He believes that when the real cause is discovered, if ever, it would be found to be due to a parasite or a poison.

The parasite theory is studied by many and some of the records cited would point in that direction. The use of thymol and oil of chenopodium seems also to have been beneficial in some cases. The suggestion of a poison, as a cause, would not destroy the argument of Dr. Goldberger, whose studies and observations have convinced him that the disease is caused by an unbalanced diet, a diet lacking in proteids and that both prevention and cure are to be found in the balanced or varied diet.

Not all experience substantiates Dr. Goldberger's theory, but it is at least a very plausible one and comes nearer to being substantiated than any other hypothesis advanced. E. G. E.

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IMPORTANT HARRISON LAW DECISIONS.

PROOF is no longer mandatory to establish the fact that the Harrison law has been instrumental in largely reducing the number of drug addicts. Therefore it would be unfortunate indeed, if the United States Supreme Court wll hold the same opinion or apply the same construction to Section 8 of the Harrison law, as rendered by Judge Wilbur F. Booth of Minneapolis in the case against one Charles E. Jennin, and in effect holding him guiltless of unlawfully having in his possession some of the proscribed narcotic drugs, because he was neither a recognized dealer, agent or dispenser of the drugs in question.

Court opinions have little value until the final verdict is rendered by the highest tribunal. The argument on which the decision was based and rendered in the case referred to is surprising to those who are not familiar with the technicalities of the law. Such construction, as we view it, would imply that while persons required to be registered under the law may have unlawful possession of the inhibited drugs, those not required to be registered, and not registering, would be guiltless though they were in possession of large quantities of habit-forming drugs. In other words, it would penalize those who in every possible way discourage drug addiction and probably encourage a scheming class of venders, who for gain are willing to pander to one of the lamentable weaknesses of human nature. National legislators instead of strengthening the law by naming those who are legally authorized to deal in and dispense the prescribed drugs, if Judge Booth's conclusions are correct, have in reality though inadvertently prepared a

way for violating the intent of the law, without being guilty of punishable offense. Conditions would soon be worse under the law than they were before its passage.

Judge Booth is not alone in his opinion, for similar conclusions have been reached by other judges.

Another important Harrison law decision was recently rendered by Judge D. P. Dyer of St. Louis by sustaining a demurrer in a case against a physician, who was indicted for alleged violation of this law. Judge Dyer contends that the physician did not violate any law through writing prescriptions, because he did not personally dispense the drug. Also, the judge took the attitude that the Harrison anti-narcotic law is not of sufficient force to compel physicians to register prescriptions of narcotic drugs, because there are no penalties provided for failure to register.

Judicial tests are necessary to perfect the enactment and viewing the situation in this light, it may be for the best that these questions have been presented in court. It is hoped however that the importance of this measure in restricting drug addiction will prompt speedy legal progress, so that the Supreme Court may soon decide whether these opinions are well founded or not. If they are, then adequate amendments are imperative; if not, then a valuable and essential precedent will be established. E. G. E.

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CHRISTMAS GREETINGS.*

Christmas is the day when the heart of man opens to joy and happiness. He, indeed, must be an incorrigible grouch or inveterate pessimist who cannot forget his own imagined misery at this time of universal rejoicing. From the old Germans or Scandinavians who celebrated the recurrence of the New Year after the shortest and darkest days had been passed, and made the evergreen hemlock of the North the emblem of the never-dying life of nature, this beautiful custom was taken over to the Christian era. Although pious priests substituted the birth of Christ for that of the revival of Spring, mankind never forgot the deep and thoughtful meaning of the day, and today, Christmas, in spite of its name, has long ceased to be a Christian festival alone. The green hemlock, with its gifts and glare, shines in every house, and its splendor brings happiness to young and old, to the infidel and the faithful, to all men without distinction of religion. For there is no other blessing so human and universal, so completely alike in the palace and the hovel, as the blessing of seeing others happy and contributing to their happiness. This desire to shed and spread happiness among our fellow creatures breaks forth in full beauty and clearness at this joyful time and nobody can resist its benign influence.

Let, then, this blissful feeling also enter our homes and open our hearts in the desire of giving and spreading happiness around us. We all need this change in our accustomed mode of thinking and acting. Let us, at this time of joy and blessing, forget the worries and troubles of business and cast aside the cares, most of which will suddenly appear imagined and unreal. There is much in life to be thankful for. Instead of trying to grasp and accumulate, let us give and distribute. Instead of hunting greedily for the glittering, deceptive

* A message from the President of the American Pharmaceutical Association.

phantom of wealth and fortune, let us turn to others that need aid and happiness more than we do. Let us bring cheerfulness and content into our homes, among our friends; they have the nearest claim to our liberal hands and minds. Let us recall the beautiful days of our childhood, when happy expectancy made our hearts throb louder, and the brightness of our eyes and the flush of our cheeks betrayed our feelings.

And, brother pharmacists, at this happy, festive time, do not forget the best and noblest friend of all, the friend that has clung to us faithfully and lovingly through our whole life, to whom we owe all our success,—our profession. We all owe Pharmacy more than we admit, than we imagine. To the true and loyal disciples, Pharmacy stands forth like the common benefactor, the mother of our thoughts, our hopes, our ideals. Readily and amply she has strewn her gifts on us, encouraged our plans, strengthened our hopes, increased our energy for broader and nobler work. And more than others have we, the members of the American Pharmaceutical Association, received and accepted this blessing, and from year to year drawn new courage, new inspiration, new hope from her. Put, therefore, the name of this beloved benefactor, Pharmacy, on the list of those that you will make happy. Prepare a gift for her by devoting a small particle of your time, your thoughts, your earnings to her benefit. Tell your neighbor, your friend, of the many benefits you have derived from her; do not be afraid of talking in boastful words, in ideal descriptions; you cannot exaggerate. Keep on talking with the strength of conviction, the power of persuasion until you have enlisted him in our ranks. Thus, by gaining a new member, you may partly repay the blessings that Pharmacy has given you and present her with a graceful Christmas gift of your gratitude.

To many of my friends in the Association this Christmas appeal may appear childlike or too glowing, and they may smile at it. But I pray you, read it again at the night of the shining hemlock tree, when your home resounds with the clang and shout of Christmas happiness, when your heart is ready to forget the harshness and cold of the daily toil and is willing to join in the sweet, innocent happiness of your beloved ones. And if at that moment a spirit of thankfulness and gratitude to your dear friend Pharmacy creeps into your heart, keep it there, nourish it, and let it bear beautiful fruit, gratifying to yourself, blissful to your profession.

WILLIAM C. ALPERS.

LIST OF MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION ENJOYING A DAY IN DENVER.

1, A. Bolenbaugh, Richmond, Va.; 2, R. H. McKenzie, Denver, Colo.; 3, Frank H. Spiller, Gardner, Ill.; 4, H. Engelhardt, Baltimore, Md.; 5, F. B. Haymaker, Wheeling, W. Va.; 6, F. L. McCartney, New York, N. Y.; 8, C. D. Charles, Denver, Colo.; 9, Miss Ruth Mahnke, Sioux City, Ia.; 10, J. W. England, Philadelphia, Pa.; 11, Miss Gertrude Scherling, Sioux City, Ia.; 12, W. G. Gaessler, Ames, Ia.; 13, Dr. Joseph Weinstein, New York, N. Y.; 14, W. F. Thebus, Denver, Colo.; 15, Mrs. W. C. Alpers, Cleveland, O.; 16, Robert Lehman, New York, N. Y.; 17, I. C. Arledge, Omaha, Neb.; 18, Mayer Mishkin, New York, N. Y.; 19, Julius A. Koch, Pittsburgh, Pa.; 21, Mrs. Robert J. Wetzlar, Peoria, Ill.; 23, Mrs. Robert Zimmerman, Peoria, Ill.; 24, Robert Zimmerman, Peoria, Ill.; 25, Miss Gretchen Zimmerman, Peoria, Ill.; 26, H. C. Christensen, Chicago, Ill.; 27, E. T. Boden, Bay City, Mich.; 28, E. G. Eberle, Dallas, Texas; 29, Martin Larson, Callender, Ia.; 30, Charles J. Clayton, Denver, Colo.; 31, H. E. Hepner, Denver, Colo.; 32, Joseph P. Remington, Philadelphia, Pa.; 33, Wilbur L. Scoville, Detroit, Mich.; 34, W. B. Day, Chicago, Ill.; 36, W. A. Hover, Denver, Colo.; 37, Edward L. Scholtz, Denver, Colo.; 38, Mrs. H. M. Whelpley, St. Louis, Mo.; 39, Dr. H. M. Whelpley, St. Louis, Mo.; 40, Gustav Scherling, Sioux City, Ia.; 41, Dr. James H. Beal, Urbana, Ill.; 42, J. G. Godding, Boston, Mass.; 43, Mrs. W. C. Anderson, Brooklyn, N. Y.; 44, Mrs. F. B. Haymaker, Wheeling, W. Va.; 45, F. W. Nitardy, Denver, Col.; 46, Mrs. Lincoln Wilson, Denver, Colo.; 47, W. C. Anderson, Brooklyn, N. Y.; 48, Mrs. J. G. Godding, Boston, Mass.; 49, Mrs. Wilbur L. Scoville, Detroit, Mich.; 50, Mrs. Thomas D. Gregg, Harrisburg, Ill.; 51, Miss Kittie Ramey, East St. Louis, Ill.; 52, Mrs. J. H. Beal, Urbana, Ill.; 53, Thomas D. Gregg, Harrisburg, Ill.; 54, Dr. A. H. Vordick, St. Louis, Mo.; 55, Mrs. Vordick, St. Louis, Mo.; 56, Dr. W. C. Alpers, Cleveland, O.; 57, Mrs. Otto F. Claus, St. Louis, Mo.; 58, Seward W. Williams, Chicago, Ill.; 59, Mrs. J. H. Robitschek; 60, Miss Catherine H. Taylor, Richmond, Va.; 61, Dr. John L. Turner, Brooklyn, N. Y.; 62, Miss Nannie Vaden, Richmond, Va.; 63, Mrs. W. B. Day, Chicago, Ill.; 64, S. M. Scott, Jr., Terra Alta, West Va.; 65, Mrs. R. H. McKenzie, Denver, Colo.; 66, Mrs. Gustav Scherling, Sioux City, Ia.; 67, Dr. W. F. Rudd, Richmond, Va.; 69, Lincoln Wilson, Denver, Colo.; 70, S. T. Hensel, Denver, Colo.; 71, C. D. Charles, Denver, Colo.; 72, Frank Lord, Denver, Colo.; 73, Mrs. F. P. Thaman, Denver, Colo.

Unfortunately the numbers on and about the individuals did not come out distinctly in the reduction of the photograph. However, a sufficient number are distinct, so the names can be traced. The photograph was loaned by Mr. S. M. Scott, Jr., and the names were supplied by ex-President Caswell A. Mayo.



Members of the party on the "A. Ph. A. Special," while enjoying the hospitalities of Denver members of the American Pharmaceutical Association in the city situated "a mile high." Names on reverse side of this illustration.

FREDERICK JOHN WULLING.*

Frederick J. Wulling, President-elect of the American Pharmaceutical Association, is a native of Brooklyn, New York, where he was born in 1866. His father was an architect by profession. When he was four years old his father's family took up their permanent residence in what had been their summer home in Carlstadt, New Jersey, a suburb of the American metropolis, and there the son obtained his schooling in the grades, the high school and under private house tutors. He received business training in New York City during the last year at high school and during the succeeding year.

The young man's ambition pointed his way to college work and to a professional education. In 1884 he accepted a position with college privileges with Dr. C. W. Braeutigam, taking up the study of medicine, giving part of his time also to translating from German, French, Spanish and Italian technical journals. Soon he showed great proficiency in pharmacy, to which he subsequently gave most of his attention, and to such end that he had passed the senior examinations in pharmacy and its allied branches before the examining boards of New York and Brooklyn and of New Jersey when he was graduated from the New York College of Pharmacy in 1887. His leadership is indicated by the fact that he won by competitive examination a senior scholarship, and that he was graduated at the head of his class, receiving the gold medal and an analytical balance for supremacy, and from another source one hundred dollars in gold for high scholarship. Meanwhile, he had been attending lectures at the College of Physicians and Surgeons of Columbia University, though not as a regular matriculate. In addition to his scholarship honors the young student was also, for the last year of his course in the College of Pharmacy, a lecture assistant to Professor P. W. Bedford. In 1887 he was elected to a full instructorship, and the course of his life was definitely laid out.

In 1890 he was made assistant professor of pharmacy in the college from which he had been graduated, and the next year he was made professor of inorganic pharmaco-diagnosis in the Brooklyn College of Pharmacy, and he remained in this position until he was called to the deanship of the College of Pharmacy which he was to establish in the University of Minnesota. Meanwhile, he was becoming known in the universities of the Old World. Immediately after his graduation in 1887 he made a tour of Europe, visiting the principal seats of learning on the continent, among them, Munich, Berlin, Goettingen and Paris. Then he returned to America and took up further post-graduate work in the Hoagland Laboratory of Bacteriology with Doctor Lennox. Two years later, in 1889, he went again to Europe on a study and observation trip studying especially the methods of teaching chemistry in the leading German universities.

The name of Frederick J. Wulling will always be inseparably linked with that of the College of Pharmacy in the University of Minnesota for it was he who organized the college as a distinctive department in 1892, and from the beginning of the department was its dean. Before he was called by the Board of Regents of the University to that institution, Mr. Wulling was already widely known as an authority in his subjects, and was recognized as one of the foremost men of his profession as a student and devotee of research work. He has added immeasurably to that reputation since his connection with the University and has brought honors to his college. During the first five years of his connection with the University he received the degrees of Phm.D., LL.B. and LL.M. This in addition to the degree of Ph.G. He is well known abroad as well as at home, having again made tours of European university cities and research centers, notably those of Scotland, England, France, Belgium, Germany and Austria in 1893, 1896 and 1911.

In 1911 Dean Wulling was sent as a representative of the University of Minnesota to European seats of learning to study their botanical and medicinal gardens preparatory to establishing a similar garden at the University of Minnesota soon after.

His University title is "Dean of the Faculty, Professor of Pharmacology and Director of

* The source of information for this sketch is a "Compendium of History and Biography of Minneapolis and Hennepin County, Minnesota."

the University Medicinal Plant Garden." He is also a member of the University Administrative Committee and of the University Senate.

He has been and is now a frequent contributor to scientific journals, and has published a great number of papers and essays as well as several large works, which include his "Evolution of Botany," his "Medical and Pharmaceutical Chemistry," his "Experiments for Beginners," his "Chemistry of the Carbon Compounds," and other technical works of his profession, with a "Course in Law for Pharmacists."

Dean Wulling is a member of a number of scientific societies, in which he is known as a prosecutor of much original research work. He has been president of the Northwestern Branch of the American Pharmaceutical Association; he is chairman of the Scientific Section of the Minnesota State Pharmaceutical Association since 1904 to date; he has been an executive officer of the American Conference of Pharmaceutical Faculties and in 1914 to 1915 was its president. In addition he has taken an active part in the work of the executive officers of the University of Minnesota; fellow American Association for the Advancement of Science; member of the American Pharmaceutical Association, of the American Conference of Pharmaceutical Faculties, University Club and Campus Club; vice president of the Minnesota Academy of Sciences since 1909 to date; honorary member of the Phi Delta Chi, and one of the Board of Directors of the Minneapolis Society of Fine Arts from 1902 to 1911.

In 1897 Dr. Wulling was married to Miss Lucile Truth Gissel, of Brooklyn, New York. A son, Emerson G., was born in 1903.

DETERMINATION OF ACETONE IN URINE.

After the addition of some drops of hydrochloric acid, 200-250 mils of urine are distilled into a 50-mil flask. To the distillate are added potassium hydroxide and a solution of iodine in potassium iodide. The iodoform is collected on a filter, washed carefully, and boiled with fuming nitric acid and some crystals of silver nitrate in a flask with a cooler. The liquid is diluted with water and filtered. The silver iodide is dissolved in dilute ammonia and reprecipitated with nitric acid, filtered, and washed. The precipitate is brought into a crucible, the filter washed in a platinum spiral, and the ash added to the silver iodide. Some drops of nitric acid are added, and material glowed carefully. By multiplying the quantity of silver iodide by 0.1171 the quantity of acetone can be found—(*Pharm. Zth.: through Pharmaceutical Journal.*)

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-Third Annual Convention

THE MISCIBILITY OF ICHTHYOL.*

JEANNOT HOSTMANN.

Several months ago a prescription, calling for ichthyol, tincture of iodine, olive oil, acacia, and water, was sent to the "query editor" of one of the pharmaceutical journals, accompanied by a request for information as to its compounding. The writer was asked to try it out, and found that a passable "shake mixture" resulted when the ichthyol was triturated with the oil, followed by emulsification *ad lege artis*.

In replying to the querist the word "dissolve" instead of "mix" was inadvertently used. A correspondent called attention to the fact that ichthyol was not soluble in oil and the editor replied that "mixing" was meant and not "dissolving."

The correspondent replied, claiming that ichthyol was "neither soluble nor miscible with oils" and sent along a sample consisting of one part of ichthyol and two parts of cottonseed oil. The appearance of this apparently bore out his statement.

The writer remembered having somewhere seen the statement that "ichthyol was miscible with oils" and examination of the label on the jar of ichthyol in stock found that it read as follows:

> "Ichthyol is soluble in water, or in a mixture of equal parts of water, alcohol, and ether; partially in pure alcohol or ether, miscible with glycerin or oils."

Turning to the "New and Nonofficial Remedies" published by the Council on Pharmacy and Chemistry of the American Medical Association, 1912, 1913, 1914, and 1915, we find the same statement; the "Extra Pharmacopœia" and other reference books also contain the same or a similar statement.

Every pharmacist knows that we rarely come across a substance that is miscible alike with water and oil, yet this statement quoted above has been made for years and apparently without contradiction. I have been unable to find a similar statement in the "Real Encyklopedia" or "Hager's Pharmaceutische Praxis."

Thinking it of enough interest to dispensing pharmacists to merit a little investigation, the samples contained in the two bottles, marked respectively ichthyol and olive oil, and ichthyol and cottonseed oil, were made by triturating the two in a mortar. Their appearance shows that they are not miscible. At first, before separation and adhesion to the sides of the bottle took place, partial suspension

*Read before the Section on Practical Pharmacy and Dispensing A. Ph. A., San Francisco meeting.

seemed to have been brought about, but close observation showed that the ichthyol was present in the form of small globules almost similar in appearance to the globules formed when an oil is violently shaken with water. Complete separation took place very rapidly.

Thinking that different oils might act differently, the accompanying set of "mixtures" was made, using 4 gm. of ichthyol and 16 gm. of each of the various oils. The samples marked 1, 2, 3, etc., were prepared by first weighing the oil into a tared bottle, followed by the ichthyol and then shaking.

The following oils were used: No. 1, olive; No. 2, sesami; No. 3, expressed oil of almonds; No. 4, cottonseed; No. 5, corn; No. 6, lard oil; No. 7, linseed; No. 8, castor. The results with all were more or less alike. It was impossible to mix any of the samples. Noticing, however, that they all acted somewhat different from those made some weeks past, and recalling that the latter ones had been made by trituration, duplicates were made. The samples marked "1a," "2a," etc., were made by weighing the ichthyol into the mortar and gradually adding the oil with constant trituration. Results were practically the same as when the oil and ichthyol were weighed into the bottle and shaken; if anything, the latter were more "miscible," or rather more easily "miscible" than when the mortar was used.

The fact that the separated ichthyol appeared to be more mobile in the recently prepared samples than in the two older ones, led to a comparison of the two samples of ichthyol employed. The sample used in making up the two older samples had been in stock for about one year. It had been kept on the shelf in the well-known glass jar with tin cover in which the article is supplied to the trade. In comparing it with the newer and larger sample, just received from the agent and contained in a glass bottle, it was found that the older sample had apparently lost some moisture due to evaporation, as it was much thicker. Upon heating at 100 degrees to approximately constant weight the loss of the older sample amounted to 35.9 percent, whereas that of the newer was 41.8 percent.

The difference in water content might account for the difference in behavior. Not enough of the older sample being available, this could not be determined. Another rather striking difference is, however, noticeable. The supernatant layers of oil in the older samples practically have their original color. All of the second set are more or less darkened. Apparently a small amount of the ichthyol has gone into solution. This must mean, that either in the old sample of ichthyol other changes than simply loss of water have taken place, or that the ichthyol on the market today is different in some respects from that of a year ago.

While it might be interesting to enumerate the slight differences in behavior as to this discoloration as well as to that of the separated ichthyol in the different samples, I do not think it important enough to discuss same in detail. Comparison of the samples will speak louder than words.

Ichthyol is a proprietary article. The Council on Pharmacy and Chemistry of the American Medical Association issues the New and Nonofficial Remedies as a guide to physicians in prescribing these so-called "newer remedies." I therefore feel that such a statement as quoted above is misleading and might easily lead to serious misunderstanding between physician and pharmacist as well as to loss and suffering to the patient.

Ichthyol is *not* miscible with oils and a physician writing for a mixture of ichthyol and oil would obtain an entirely different product from what he had been led to expect by the statement appearing in the "N. N. R.," as well as on the label of the ichthyol containers and the literature put out by the manufacturer thereof.

COLUMBIA UNIVERSITY COLLEGE OF PHARMACY, August, 1915.

ARRANGEMENT OF THE PRESCRIPTION DEPARTMENT.*

H. W. WEED, NEW YORK.

The modern druggist is as far away from the "mysterious" in regard to the conduct of his prescription department as he is far away and different in his method of store merchandising when compared to the apothecary shop or drug store of ten or fifteen years ago. Therefore it is not to be wondered at that improvement in arrangement, fixturing and equipment in the modern prescription room has undergone many changes to keep pace with the demands of the progressive merchant.

The object of this paper is to suggest to the members of the American Pharmaceutical Association who are contemplating changes in their prescription department a few suggestions which seem to the writer worthy of consideration.

First, let us think for a moment of the actual needs of the smaller merchant, the store doing in the neighborhood of $25,000.00 a year. These stores to make money necessarily have to be clerked with economy; hence the proprietor generally alternates with his one prescription or head clerk, as he is generally termed. To remove the prescription department in such instances to the back part of the store across the back or in either corner is bad for service and should not be done. If any reader's store is thus arranged, I would suggest you change at your earliest convenience to a position of the drug counter which should be located not more than half way back in the store, and so constructed that the prescriptionist could have a good view of the store. This statement will shock some of the straight-laced ethicals, whose "Safety First" ideas call for isolation, concentration, uninterruption, etc., all necessary factors to be insisted upon in the conduct of large departments employing many men whose total daily output of prescriptions compounded will reach or exceed two hundred and fifty. There, such discipline is necessary. Please do not misunderstand me. I am not belittling dignity or safety, but we are considering the one man proposition in the smaller town or the neighborhood druggist, who, because of the smallness of his business, is obliged to be general clerk as well as prescriptionist; hence the necessity of constructing, arranging and locating this department so it will fit into the merchandising scheme in such a way that the proprietor or head clerk has general supervision of the whole store at all times. The result of this arrangement will be satisfied customers, increased business and a competence worthy the calling, because the mas-

*Read before Section on Practical Pharmacy and Dispensing, A. Ph. A., San Francisco meeting.

ter hand and mind is in the midst of things and not separated by an unwise choosing of location for this department.

The amount of space required would be 4 ft. long by 18 in. deep and 6 ft. high, running lengthwise of the store and should be a part of the drug counter, which is, as you know, a fixture 30 in. wide by 36 in. high. This would give plenty of room in front of the upright for display purposes. I am opposed to zinc covering for the work board, glass is always preferable, and this ¼ to ⅜ plate. The arrangement of drawers, width of shelves, etc., should be carefully thought out by the owner, avoiding always big drawers, as they invite untidiness and waste of room. In one corner of the work board should be a very small sink about 6 by 9 inches, fitted with gooseneck faucets for hot and cold water. The majority of my readers may think these dimensions too small, but can you wisely devote more space?

As stock turnover is also necessary to success, I counsel the purchase of drugs in small quantities. Therefore, in ordering prescription ware, I would not buy any salt mouth bottles larger than four-ounce and only a limited number of them.

The care and filing of prescriptions might just as well be considered here, for the following plan is the best and most applicable for all prescription departments, regardless of size and number compounded. This method enables immediate reference to any number desired, takes up little space, as you will see. The arrangement is to have cardboard boxes made 4⅜ wide by 6½ long by 2⅛ deep outside measurements, not including covers. Procure some thin bookboard, have same cut 6⅛ long by 3⅛ wide, have a small hole punched in these cut pieces in the center about half an inch from one end. A pair of these bookboards will form the top and bottom of the prescription file, the scheme being to place one hundred prescriptions between the covers, bind them loosely with a single string which will make a sort of loose leaf arrangement, with one hundred prescriptions to a book and five books to the box, and two boxes deep on a shelf. By this method you will have in time a perfect metric system of filing; every two boxes containing one thousand prescriptions. The writer saw a cabinet of twenty thousand prescriptions filed in this way and was amazed at the small space occupied by so many prescriptions and the ease with which any number could be selected. The shelf arrangement should be built to accommodate but ten boxes wide and two boxes deep. Therefore, the first shelf would hold prescriptions numbering from one to one thousand; second shelf one-thousand-one to two thousand; thus a cabinet with ten shelves would accommodate one hundred thousand prescriptions. The system of numbering and pricing is, numbers always in the lower left-hand corner, prices in lower right-hand corner.

Where the business of a store warrants the steady employment of two or more prescriptionists who give their entire time to manufacturing and prescription work, the location of the department may be in a space least valuable for merchandising purposes, preferably in a space next adjoining the rubber goods or sick room supply department, for the reason that the prescription department is the natural and almost exclusive feeder to this allied department, and if this department is merchandised properly and properly clerked, the business of this department will grow and become the most profitable part of your whole store.

Have you ever stopped to think, when a prescription is brought into your store, it should be thought of as a certificate of information signed by the doctor, conveying to you the knowledge that there is sickness in the home of the bearer, and, where sickness is, there is every possibility that many sick-room supplies may be required, and the very opportunity you are seeking is at hand? Perhaps you can tell by the medicine prescribed somewhat the nature of the sickness in the home. If not, a few simple inquiries will give you the idea of what to suggest in the way of sick-room supplies. The present method of handling prescriptions is all wrong, according to the writer's notion of merchandising. Did you ever know of a perfectly well person wanting a pair of crutches or a bed back-rest or a bed-pan, a sick-feeder, or a gruel tube? You have probably said a great many times when handing out a prescription after filling it, "Who is sick up at the house?" You have been told by the mother or father, or James or John, or whoever brought in the prescription, and the only comment made is, "I am sorry; tell them I inquired after them; hope they will not be confined to the house long." Where, if you applied the art of salesmanship, it would be the most natural thing in the world to say, "When father gets so he can sit up, you better come down and get him a back-rest or an invalid's wheel chair, so that he can begin to get a little exercise and sunshine." Just that moment you begin to bring the prescription department into closer relationship with your rubber goods and sick-room department. Just that moment you will begin to get enthusiastic over this suggestion the writer is making and by giving it some thought and by letting your imagination work along these same lines, you will see what's in the writer's mind when he urges upon you to link these two departments together.

Labels and copies of all prescriptions should be typewritten.

No person other than the man on the job can lay out a suitable or workable floor and fixture plan without careful data as to size and shape of store, together with an estimate as to the amount of business expected to be done, the population of the town, also whether the M. D.'s are prescription writers or dispensers. However the experience of others is valuable and a suggestion from this one, an idea from another helps a fellow solve the problem of the best for his particular store. So it is with the hope this brief article will help some brother to better things, as it surely will if some of the suggestions are adopted, for they are not experiments, but the result of experience.

ABSTRACT OF DISCUSSIONS AND REMARKS.

Chairman Osseward: I saw in one of the papers that Mr. Liggett had made an address before the Philadelphia branch of the American Pharmaceutical Association on "Modern Merchandising," and the paper appealed to me. So I got the idea of writing Mr. Liggett and asking him to prepare a paper. I thought it might bring out the point that he would have some of his men give us a paper. Mr. Liggett told me as he was not a practicing pharmacist, but a merchandiser, that he could not comply with my request. I then wrote Mr. Liggett and asked him if he would not have one of his men give us a paper, and this is the result.

There are several points in it that are valuable, it seems to me. The idea of placing the prescription department in the center of the store was a new thought. Of course, he is speaking of a small store now; this does not mean a large store. It does not mean those who have a good prescription business. He suggests making the prescription department more prominent, placing it where you can watch both ends of the store, especially where there is only one man in the store most of the time. These are very valuable suggestions.

Dr. Weinstein: I do not see what I could learn from this. This is the arrangement in most of the stores. The difference is that most of the stores do not do $2,000 a month. There are stores in New York that do $2,000 a month or say $25,000 a year, but most of the stores would be happy if they could do so.

Mr. G. H. P. Lichthardt: It seems to me that the valuable part of that paper is the suggestion as to salesmanship. It is brought out very forcibly. I never realized when Jimmy came in with a prescription for an old gentleman with the rheumatism that possibly he might want a water bag. I know that I could not hold a job in a chain store because I could not do that. I would get fired the next week. But that is evidently the great point in that paper, to my mind.

Mr. F. W. Nitardy: The way that paper is written, you can see that it is by a man that considers dollars and cents in the drug business. He is a merchant and he is a business man, and his eyes are open for getting the dollars. We have got to do that, even though we like to be technical pharmacists.

I have been told lots of times that I am not a business man at all; that I am a scientific man. I do not lay any claim to that; I try to be a business man; that is the way I make a living.

I think there is a lesson in that paper. I don't agree with Dr. Weinstein that he cannot see anything new in the paper. I think it sets us a good example. I greatly appreciate the idea of Mr. Liggett.

MAGNESIUM CHLORIDE TO STIMULATE CYTOPHYLAXIS.

The property possessed by living cells of protecting themselves from infection is named by the author cytophylaxis. The favorable action of the majority of antiseptics used is due not so much to their killing the harmful micro-organisms, but to their allowing the process of cytophylaxis to proceed. This is mainly due to the action of phagocytes. Unfortunately, the majority of those antiseptics which kill the harmful germs, at the same time destroy, or hinder, phagocytosis. Even in the most favorable cases the number of phagocytes is reduced by 80 per cent. This explains the lamentable number of failures which follows the use of antiseptics when applied to infected wounds. The problem of killing the microbes without injuring the living cells has not yet been solved; but many antiseptics are known which destroy the cells without with certainty destroying the microbes with which they are mingled. The author has therefore experimented with a number of non-antiseptic solutions which stimulate phagocytosis. Of these magnesium chloride, in the proportion of 12.1 per 1,000 is one. This solution increases phagocytosis 75 per cent. compared with physiological salt solution, and the latter is 63 per cent. more active than Ringer-Locke's serum. The augmentation is observed not only in the number of active polynuclear phagocytes, but also on the individual phagocytic power of each cell. The solution retains its cytophylactic power when administered by injection into the circulation. It may advantageously be employed in this manner as well as applied locally in the form of dressing.—*P. Delbert and Karajanopoulo (competes rend., 1915, 161, 268), through Pharmaceutical Journal.*

Contributed and Selected

A REVIEW OF PHARMACEUTICAL LITERATURE.*

JOHN K. THUM.

It may be of interest to pharmacists to know that not only are some of the better class of newspapers showing a growing disinclination to advertise patent medicines, but they are also beginning to discuss the proprietary evil. The *New York Sun* reported an address delivered by Prof. Francis Carter Wood before the alumni of the College of Physicians and Surgeons, and in its editorial columns commented quite freely thereon. The gist of the *Sun's* editorial is a warning to the public to shun the proprietary-prescribing physician.

It impresses in unmistakable language the possibilities of harm to the patient in the acceptance of prescriptions from medical men who are too indolent or unscientific to think out and write their own prescriptions; who know nothing of the composition of what they prescribe except what the proprietor chooses to tell them, and who certainly have not the time nor the knowledge to find out if the manufacturer is telling the truth. It goes on to say that we "trust the doctor because we know him and that this trust is misplaced if he prescribes a drug the composition of which he does not know."

That the newspapers could be of considerable influence in correcting this evil goes without saying, but their interest must become more general.—Editorial, *New York Sun*, October 7, 1915.

The Assay of Balsam of Peru:—The authors of this paper state that for the assay of this balsam, a number of tests have been proposed, and are to be found in the various pharmacopœias and similar publications; that those depending on color reactions are usually unreliable and of limited value. Much stress is laid on the acid value, saponification value, cinnamein content and its saponification value; that the determination of these constants is generally required by the best authorities and yet it is obvious, they add, that such values are far from being absolutely characteristic, that they are insufficient to demonstrate the purity or authenticity of a sample is a fact unpleasantly brought to their attention by the appearance in recent years of imitation or "synthetic" balsams almost indistinguishable from the natural product.

In a thorough examination of balsam of Peru made by Thoms there was isolated, among other things, a new alcohol, peruviol. This compound, a light liquid with a characteristic odor, was subsequently found to be identical with nerolidol, the sesquiterpene alcohol isolated by Hesse and Zeitschel from the high-boiling fractions of oil of orange flowers.

The authors believe that peruviol, with its high iodine value and dextro-rotation, is the most characteristic constituent of the balsam, and they advise the following simple method for isolating it:—

Peruviol Test: 20 grams of balsam are saponified by heating one hour on a water-bath, with frequent shaking, in a liter flask, with 20 grams of 25 percent potassium hydroxide. Steam is then passed through the mixture, and the distillate collected in 100 or 150 cc. flasks with narrow, graduated necks. From natural balsams there is obtained in this

*Read before Philadelphia Branch, A. Ph. A., Nov. 9, 1915.

manner, in 300 cc. total distillate, from 0.7 to 0.9 cc. of light oil. Imitation balsam gives only traces of heavy oil.—By Francis D. Dodge and Alfred E. Sherndal, *Journal A. Ph. A.*, October, 1915, page 1222.

Quizzes, Tests and Examinations:—Repeated arguments against final examinations as a means of judging the ability of a student have failed to convince the writer of this paper that the time is ripe for their abolishment. They are the best incentive a student has to stimulate his interest and make him strive to do his best. But that best should not be postponed until just a few weeks before final examination. There should be consistent daily application on the part of the student. "There is no short road to success." There never was and never will be! The author's experience in teaching has convinced him that the most practical method of making students study all during their college course is to put quiz work on the basis of frequent written tests.—By H. V. Arny, *Journal A. Ph. A.*, October, 1915, page 1233.

New and Non-official Remedies:—The Council on Pharmacy and Chemistry of the A. M. A. have accepted histamine hydrochloride, the hydrochloride of the base beta-iminazolyl-ethylamine (histamine). Histamine is closely related to histidine, from which it differs in that one molecule of carbon dioxide has been eliminated. Histamine hydrochloride has a powerful contractile action on certain muscular fibers and a strong vasoconstrictor action. The available evidence does not warrant a recommendation for its therapeutic use, but it is a valuable reagent for the standardization of pituitary and similar preparations.

Mercurialized Serum has also been accepted by the same body. It is a solution of mercuric chloride in normal horse serum, diluted with physiologic sodium chloride solution. It is claimed to be of value in the treatment of syphilis, particularly of the cerebrospinal type. It may be given intravenously or intraspinally.—*Journal of A. M. A.*, October, 1915, pages 1367, 1185.

The so-called Concentrated Solution of Silver Iodide:—The writer of this paper states that there is on the market at the present time a so-called soluble preparation of silver iodide. That is to say, the silver iodide is in concentration in the form of a solution and the addition of this solution to a designated volume of water makes a 5 percent suspension of silver iodide. Whether this method of dispensing silver iodide possesses any advantages over the usual method is questionable. In the writer's opinion it would be far safer for a patient to receive a freshly prepared precipitate of this chemical, well washed, and held in suspension with the aid of a solution of gelatine, Irish moss, or some other appropriate gummy substance.

This solution of silver iodide is made by taking advantage of the fact that silver iodide is soluble in an excess of potassium iodide.

One of the claims made by the manufacturers of this preparation is that "it is less expensive" than preparations of the same salt sufficiently diluted for immediate use. When one considers that the solution of this salt requires a considerable excess of potassium iodide (the preparation on the market showing on analysis at least 60 percent of free potassium iodide), and then considers the price of potassium iodide even in normal times, one is averse to agreeing with this statement.

It is also well to remember that potassium iodide as found on the market is usually quite alkaline and while it may be true that such a preparation is painless when introduced into the urethra, that does not prove that it is harmless. It is also well to remember that suspensions of silver iodide are frequently used in eye infections, and for that purpose should be very carefully prepared, the silver iodide first being very carefully and thoroughly washed with sterile distilled water. If this technic is not followed, the application of the preparation to an eye condition will result in much irritation, pain and an inflammatory condition that is difficult to control.

The writer's investigation of this preparation revealed that it can be prepared readily according to the following formula:—

Silver nitrate	3.70
Potassium iodide	17.00
Distilled water to	25.00

This volume of 25 mils solution, when added to 75 mils of distilled water, makes a 5 percent suspension of silver iodide.—By John K. Thum, *American Journal of Pharmacy,* November, 1915.

Detection of Arachis Oil in Olive Oil:—Arachis oil, more generally known as peanut or ground-nut oil, is quite frequently used to sophisticate olive oil. The following method for its detection is suggested: One mil of the suspected oil is heated with 5 mils of an 8 percent alcoholic caustic potash solution for four minutes in a flask provided with a condensing tube. After cooling to 25°, 1.5 mils of a mixture of one volume of glacial acetic acid and two volumes of water are added, followed by 50 mils of 70 percent alcohol. If the solution is turbid, it is carefully heated until perfectly limpid, is then cooled gradually and the temperature at which it becomes turbid is noted. Pure olive oil becomes turbid at 13.5°, that containing 5 percent arachis oil becomes turbid at 16.9°; that containing 10 percent becomes turbid at 19.8°, and so on. The higher the percentage of arachis oil present the higher the temperature at which the suspected oil becomes turbid.—*The Druggists Circular,* October, 1915, page 665.

THE MERITS OF PHARMACY.*

WILLIAM C. ALPERS.

In timid and hesitating mood, pharmacy steps into the circle of the older and more venerable professions, doubtful of cordial reception. Will they welcome her as a legal sister, or will they turn on her as an intruder? It is not much more than a generation that pharmacy has laid claim to full recognition, at least in the United States, and there is still much opposition to this claim. It is said that she lacks the dignity of a science, and is tainted with commercial desires and tendencies. She possesses neither the venerable age of philosophy, nor the majesty of law, neither the sacredness of theology, the benign power of medicine, nor the depth of natural science. She may be an art, an accomplishment, a skill, but no science.

Whosoever looks upon pharmacy in this way knows but little of her merits, and judges superficially. It is true she does not surround her work with outer glare and glitter. In her daily practice we look in vain for the pomp of judicial display, or the incense and music of sacred worship; nor is there the mysterious dignity of medicine. In a modest, quiet way she stands back and performs her duties without ostentation. Other sciences and professions have gone the same thorny path before they found full recognition. It is nearly one hundred years ago,—in 1824,—that a young pharmacist, Justus Liebig, was appointed the first professor of chemistry at a German University. Raised as a pharmacist in his city, and extending his knowledge of chemistry in Paris, under Gay Lussac and Humboldt, he recognized the possibilities of his vocation, and his master mind conceived ideas and inventions that created not only a new science, but also a new industry. The older professors of Giessen looked upon him with ridicule and disdain. Chemistry might be a toy for scientific men,—a science, never! But the young pharmacist, only twenty-one years old, worked patiently along, and before his death he had become a giant among his peers and a benefactor of the whole world.

*Address delivered at a convocation of the Deans of Western Reserve University, Cleveland, O., before the faculties, members, students and friends of the University.

Where chemistry stood then, pharmacy stands today. Chemistry has since performed wonders, but her great achievements were not due to theoretical deductions and philosophical arguments alone. The chemical thinkers, following Liebig's example understood how to apply the results of their minds to practical purposes, to the needs and demands of daily life, and thereby make them popular. It is in this adaptation that the strength and influence of all science lies today. The times of abstract thought and mere philosophical arguing have gone. The sage of the middle ages who pondered quietly in his study and built up around himself a new and beautiful world of mental ideals, has passed away. His writings, understood only by a few, are still the pride of scientific libraries, but their mystic pages are no source of inspiration or power. Knowledge has long ceased to be the mysterious possession of a few, who were looked upon with awe by the wondering crowds. Knowledge, today, is the property of all; it is demanded and given like air or water, common and accessible to everybody. In this general distribution of useful knowledge lies the duty and the power of a university. It is not erudite discourses and essays, however deep and beautiful they may be, that make a school of learning great; it is the ability to use knowledge and science for the benefit of all mankind; to come forth among the people like the distributor of blissful gifts, and spread blessing and happiness among the sick and ignorant.

If these premises are correct, if this conception of the mission of a university is true, pharmacy may safely step forward and claim full recognition. Her teachings are not in the abstract, her doctrines are not those of speculation and theory, her work is not for the few select, but for all, the highest as well as the humblest. She does not stalk about on stilts, nor does she soar to heights unapproachable to the masses. She walks in common garb in the streets and highways, carrying small and humble gifts, that she willingly distributes among the sick and needy. She talks in common words, ennobled only by looks of mercy and depth of feeling. It is not by grandiloquent phrases, but by quiet and effective deeds that she accomplishes her daily task. Relieving the sufferer, healing the sick, soothing the afflicted, are her watchwords, and her days are spent in spreading health and blessing.

This humble work, however, is not done without mental strain and the efforts of thinking minds. In pharmaceutical laboratories all over the world thousands of experiments and assays are daily performed to discover new chemicals, new qualities of minerals and plants, new combinations of older medicaments. A special branch of chemistry has grown up,—pharmaceutical chemistry,—with its own laboratories and apparatus. Such chemical works of enormous size are erected in all civilized countries, and their products, in the form of new remedies, go forth to the pharmacists and from them to the patients. In the schools of pharmacy, assays of plants, microscopic examination of their parts, research in pharmacognosy is the daily work; weeds and herbs, trees with their roots and bark, that nobody noticed nor cared for, are drawn into this sphere, and wonderful properties, formerly unknown, are discovered. As an example, let me mention the well known Cascara Sagrada, the bark of a certain buckthorn, the preparations of which in the shape of fluidextract, pill or tablet, have worked infinite good to suffering mankind. Before the time of pharma-

ceutical research, this plant grew abundantly, as now, in California, but was an unknown shrub that nobody cared for; now, it is a blessing to mankind. And, not satisfied with examining indigenous plants, pharmacy has reached out to other continents, and by her efforts to bring their plants nearer, created a new field for the agriculturist. In the hills of Kentucky, ginseng and hydrastis are now cultivated. Wisconsin and Minnesota produce tons of cultivated mint and other labiates; belladonna and digitalis are now raised on large tracts in California; the fragrant camphor tree, of whose production Japan formerly had a monopoly worth millions, now grows in the swamps of Florida. Daily new medicinal plants are drawn into this scope, and our country with its manifold climates and soil, will soon be independent of the botanical products of Europe, Africa and Asia. Thousands of men are thus employed in the service of pharmacy, from the professor in the schools and the chemist in the pharmaceutical works, to the laborer in factory and field. Here, then, is a profession whose efforts and teachings go back to the people in double blessing,—as a producer of work for thousands and as a reliever of pain and sickness.

The homes of pharmaceutical schools are in most cases small and modest. As a rule, they are private enterprises, supported solely by the tuition of the students. In some of the western states, where the value and merits of pharmacy have been better recognized than in the east, state universities have regularly acknowledged pharmaceutical faculties and the schools are admirably equipped. The students there are on a par with all other students, entering the school with the same preliminary education as those of other professions. In the east and middle west, much remains to be done. Philanthropists have, so far, overlooked pharmacy. With one exception, there was no endowment of any size ever given to schools of pharmacy. Many men have become immensely rich through the products that the humble pharmacists all over the country have sold; but while they give liberally to medicine, law and science, no one ever thinks of pharmacy. This is particularly regrettable in Ohio, Pennsylvania and neighboring states, the states of oil and coal. The pharmaceutical products gained from these two sources are very numerous, and have earned millions for the manufacturers. Would it not be a gracious acknowledgment of the help that the pharamcists have given these wealthy men to endow pharmacy in a suitable manner?

Meanwhile, we pharmacists perform our quiet and humble task. Undaunted by the many difficulties that beset our profession, we continue to do our work in the interest of humanity and civilization, aiding the weak and afflicted, extending the scope of our usefulness and adding our share to that noblest aim of all knowledge and science, the betterment and uplifting of mankind.

THE AIMS AND PURPOSES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

CASWELL A. MAYO.

A meeting of the Philadelphia College of Pharmacy, the Massachusetts College of Pharmacy and the New York College of Pharmacy, was held at the New York College of Pharmacy in 1851 to discuss the problem of improving the condition of the drug market, and preventing the importation into the United States of drugs and chemicals of inferior quality. As an outcome of this conference, a call was issued by the representatives of the three colleges for a meeting to be held at the Philadelphia College of Pharmacy in 1852, with a view to carrying still further the objects aimed at in the conference of colleges and perfecting a permanent organization to safeguard the welfare of the public as to the quality of the drugs and medicines sold, and to correlate the efforts of all those influences which were at work in different sections for the elevation of pharmacy, and the improvement of the quality of the drugs on the market.

It was at this meeting in 1852 that the American Pharmaceutical Association was formally organized. The objects of the Association as set forth in the articles of association show the lofty ideals of the founders of this organization. The following quotation from the constitution shows clearly the objects which are aimed at:

1. To improve and regulate the drug market by preventing the importation of inferior, adulterated, or deteriorated drugs and by detecting and exposing home adulterations.
2. To encourage such proper relations among Druggists, Pharmacists, Physicians and the people at large, as may promote the public welfare, and tend to mutual strength and advantage.
3. To improve the science and art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.
4. To regulate the system of apprenticeship and employment, so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing and selling medicines.
5. To suppress empiricism, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.
6. To uphold standards of authority in the Education, Theory and Practice of Pharmacy.
7. To create and maintain a standard of professional honesty equal to the amount of our professional knowledge with a view to the highest good and greatest protection to the public.

With such lofty ideals set forth in its articles of association, it naturally followed that the highest type of men in pharmacy were attracted to the organization. The roster of the officers of the association, from the time of its organization in 1852 down to the present, constitutes an honor roll of pharmacists,

*An address delivered before the Exposition session, Friday afternoon, August 13, by Caswell A. Mayo, retiring President of the American Pharmaceutical Association. On this occasion a bronze medallion was presented to the American Pharmaceutical Association which has been deposited with the Historian.

and to be included is a distinction of which any pharmacist might well be proud. Unceasingly during all these sixty-three years this organization has earnestly, intelligently and unselfishly sought for the elevation of pharmacy, the improvement of the conditions surrounding the pharmacist, and the betterment of the quality of the drugs dispensed by them. This organization and its members have played a most important part in the drafting of regulations governing the importation and interstate sale of drugs and chemicals. This organization and its members have kept close watch on the advances in pharmaceutical technique, in chemistry, in pharmacognosy and in materia medica, and have brought their efforts to bear on the technical problems of the collection, manufacture, preparation and dispensing of drugs and chemicals, to the end that the physicians and the public of these United States might be able at all times to have at their command pure drugs properly prepared and carefully dispensed. Since health is the basic essential for human happiness and progress, the members of the American Pharmaceutical Association as conservators of health, have played a most important part in contributing to the public welfare.

The annual reports which have been prepared upon the condition of the drugs found in the market by expert members of the American Pharmaceutical Association, constitutes an invaluable record of progress in the science of botany, pharmacognosy and chemistry. With the aid of these reports, analytical chemists and expert pharmacognocists, whether acting in their private capacity, as employes of buyers and manufacturers of drugs, or as municipal, state or government officials, have been enabled to materially improve the condition of the drug market, and bring about a great betterment in the drugs offered for sale here.

It was the American Pharmaceutical Association which first awoke to the increasing danger to the public welfare from the indiscriminate use of habit-forming drugs, and as a member of that organization, I, myself, had the pleasure of offering a resolution at the St. Louis meeting in 1901, providing for the appointment of a committee of three to investigate and report upon the increase in the traffic in habit-forming drugs, and to propose some means of safeguarding the sale of these drugs, and preventing the further spread of the drug habit. As a result of this resolution a committee was appointed which carried on an investigation in a number of the larger cities as to the use of habit-forming drugs. Following the report of this particular committee, a committee on narcotic legislation was provided for and appointed. This committee was continued from year to year, making voluminous annual reports, until finally a model anti-narcotic law known as the "Beal Anti-narcotic Law" was enacted to serve as a guide for pharmaceutical legislation throughout the United States. Since that time, something like forty states have incorporated this law, wholly or in part, into their statutes, while portions of it have been included in national legislation, either in the Food and Drugs Act of June 30, 1906, or in the Harrison Anti-Narcotic Act of 1914, or in other special legislation.

In the drafting of the national Food and Drugs Act of June 30, 1906, the leaders of the American Pharmaceutical Association took a helpful and influential part. Their hand is also shown at many places in the rules and regulations promulgated by the authorities charged with the execution of the law.

Its representatives acting through the National Drug Trade Conference, a body consisting of delegates from all of the national associations interested in the drug business, played an important part, it might almost be said, a dominating part, in the formulation of the national Anti-narcotic Act, known as the Harrison Law, and which has done more than any other legislation ever adopted towards the suppression of the illegal traffic in and the misuse of narcotic drugs. In view of the fact that the sale of these drugs is an integral and essential feature of the pharmacist's work, and that the many restrictions imposed and the tax placed upon the pharmacist by this law, diminished his profits and increased his labors, it will be clear that the American Pharmaceutical Association in advocating this law had been actuated only by the highest and most altruistic motives.

When the American Pharmaceutical Association was organized no restrictions were placed about the entry into the sale of medicines and drugs. Largely through the labors of this organization and its members, there now exists in every state in the union, carefully drawn laws, setting up certain qualifications which must be fulfilled by any one undertaking the sale or dispensing of medicines at retail. This alone is a most important contribution to the public welfare, and this service alone would have amply justified the existence of the organization.

But the highest service which has been rendered to the American public by this Association has been the installation into the minds of the pharmacists of the United States of the loftiest ideals of devotion to duty, of self-sacrifice, and of public service. Through its influence, the ideals of pharmacy have been uplifted and maintained. The duties of the pharmacist to the state and to his fellow men have kept ever in the foreground, and through the inculcation of these lofty ideals the American Pharmaceutical Association has influenced the pharmacists of the United States, those who were among its members directly, those who were not members indirectly, making of them better men, better pharmacists and better citizens.

The influence of the American Pharmaceutical Association has made itself felt, not only through its members, but through other organizations in which it has been a factor.

It was under the auspices of the American Pharmaceutical Association that a national association was formed, including all the colleges of pharmacy in the United States. This organization known as the American Conference of Pharmaceutical Faculties, has been an important factor in unifying and elevating the standards of pharmaceutical education; and whatever good has been accomplished by this organization redounds to the credit of the American Pharmaceutical Association, under whose auspices it was organized, and with which it is most intimately associated.

It was under the auspices of the American Pharmaceutical Association that the National Association of Boards of Pharmacy was constituted, including among its membership the boards of pharmacy of practically all the states. Through the work of this Association the standards of requirement for entry into the practice of pharmacy in the several states have been unified and elevated, thus bringing into the service of the public as licensed pharmacists, men of

higher attainments and better equipment for the responsible task of preparing and dispensing medicaments.

The limitations of space forbid the entry into details of what has been accomplished by this organization. But one aspect of its activities might well be accentuated at this particular junction, when the interruptions of commerce by the European war had cut off the source of supplies whence many of our drugs have been drawn heretofore. This particular phase of the activity of the Association is the development of the drug supplies of the United States. Reaching from the tropics to the north frigid zone, with a climate embracing every extreme, with lands of every variety, and varying in elevation from below the sea level to an elevation of 15,000 feet, the United States is capable of producing almost every variety of botanical drugs known to civilization and used in medicine. It is the province of the American Pharmaceutical Association to find and point out to collectors the vast supplies of drugs indigenous to this country, and to point the way and encourage research in the culture of drugs not found here, but which are capable of being grown here, so as to make us independent of the remainder of the world.

Surely an organization whose aims are so lofty, whose work is so unselfish, whose membership is so widespread, and whose members are so loyal in their support of the aims, must be reckoned as one of the important factors in the development of the highest national efficiency of the American people; and it is with pride in the Association and with humility at my inability to adequately set forth its claims to recognition, that I here briefly, inadequately and all too poorly state a few only of the reasons why the American Pharmaceutical Association should rank in the public esteem as among the most beneficent and praiseworthy organizations which have enjoyed the hospitality of the California people, and of the Panama Pacific International Exposition.

A PLEA FOR AN UP-TO-DATE YEAR BOOK.*

E. N. GATHERCOAL, CHICAGO.

The Present Year Book is Largely an Historical Volume Only.—The Year Book consists of two distinct parts, namely: The statistical matter (the constitution, by-laws, etc., the list of officers and committees, the report on the funds of the Association, and the lists of members) and abstracts of those papers published during the year that relate to pharmacy, pharmaceutical chemistry and materia medica.

The statistical matter has no value except of an historical nature after the year to which it applies is ended. The abstracts when more than a year old serve but little other purpose than for "looking up the literature" relating to pharmaceutical subjects.

The Added Values of an Up-to-Date Year Book.—If the 1916 Year Book could be published during the year 1916, it would be not only up-to-date, a condition decidedly worth while, but would possess other advantages.

* This article is published without comment. Every member has an interest in the Association and discussions develop better methods, new ideas and contirbute to the growth and value of the organization to its members.

Membership in the Association is an honor, an empty honor, however, if no one knows about it. The list of members should be also a true directory, but a directory to be of value must be recent. The constitution, by-laws, and rules may be amended or revised at every annual meeting. How worth while it would be to have a complete and accurate copy of these articles within a month or so after the meeting.

The abstracts, if kept up to date, would not only have a much enhanced value for tracing the literature on a subject, but would have a real *reading* value. Readable abstracts, timely and covering the field of pharmacy, not only scientific but commercial, would be a real "drawing card" for the Association.

The Plan.—Print the Year Book in six installments issued either as supplements to the Journal or as a separate publication under the name it now bears. The installments might be issued in January, March, May, July, September and November and each contain the abstracts of the previous two months. In addition to the abstracts the January number could include the Index for the previous Year Book; the March number, the Treasurer's report and report on invested funds; the May number, summary of Council motions since the last annual meeting; July number, lists of members in good standing; September number, the minutes of the general and section sessions; November number, the corrected constitution, by-laws, and rules, and list of new officers and committees.

Binding.—The installments as described above could be so printed that in the bound volume the statistical portion could all be placed in one part of the book or separated into two parts as is done now. The abstracts would, of course, be presented in a number of divisions in each installment as is done now in the whole book, but it would hardly be possible to so arrange these divisions as to make each complete for the year in the bound volume. There is no great advantage, however, in the present rather elaborate arrangement of abstracts. Each subject must be sought through the index, anyway.

If some members preferred to have their Year Book as a bound volume at the end of the year, the Association could retain their installments, bind them and deliver the volume early the following year. Of course, members receiving the installments as issued would bind same at their own expense.

Expense.—The cost of printing and mailing the Year Book in installments would be appreciably less than the present method.

The Year Books for 1914 and 1915.—It will cost the Association at least $7500.00 to prepare the copy, print and distribute, under the present plan, these two Year Books. If the plan as above outlined could be entered upon at once and put into effect for the 1916 Year Book, the January number could be used for the lists of officers and the constitution, by-laws and rules, as revised at the last annual meeting, while the number for next July could contain the lists of members as revised to July 1st. Then there would be nothing left but the abstracts for 1914 and 1915 to be published. These could be prepared and issued in 1916 as two volumes bound under one cover, or bound separately. The cost would be materially reduced and the Association could draw upon the income from the National Formulary to enable it to catch up with its publications.

The Plea.—Why not adopt the above mentioned plan for bringing the Year

Book up to date? If there are objections to certain features, modify them so as to correct the objections. Please discuss the proposition. I appeal especially to the Branches and trust that the subject will be brought up promptly for discussion in each of them. Probably no action regarding such a radical change in the Year Book can be nor should be taken without the concurrence of the Association in annual session, therefore the 1914 Year Book should be pushed to completion and publication and be distributed if possible before the next annual meeting. Other plans for changing the present Year Book may be presented to the Association for discussion. Perhaps out of this discussion the Council can formulate and indorse some plan that will get us up to date and present it to the Association for adoption.

In case of the adoption of this installment plan, the Reporter should become in truth the Editor of the Year Book and should be alone responsible for its issue. He can organize a larger force of helpers—there are many capable members willing to serve—assigning each but one or a very few journals, and requiring prompt reports from each. His duties would be largely editing these reports rather than preparing the actual abstracts.

CONTRIBUTIONS OF THE CHEMIST TO THE MANUFACTURE OF PHARMACEUTICAL PRODUCTS.*

FRANK R. ELDRED.

The manufacture of medicines is not confined to pharmaceutical houses, since they do not produce many of the medicinal chemicals, volatile oils and other products which may be said to constitute a large portion of their raw materials. Many of these products, however, must pass through the hands of the pharmaceutical manufacturer in order that they may be put in a form suitable for use. It is not easy to draw the line between pharmaceutical manufacturing and the closely allied industries as their fields of activity will frequently be found to overlap; for instance, the study and manufacture of certain alkaloids have been left almost entirely to pharmaceutical chemists and manufacturers although most of the alkaloids have been produced by distinctively chemical manufacturers.

Few industries have been as dependent upon the work of the chemist as that of pharmaceutical manufacturing. Many industries have been developed up to a certain point without the direct assistance of the chemist, but the very beginnings of pharmacy and chemistry were closely linked together and pharmaceutical manufacturing was made possible by the work of the early chemists. It is true that pharmaceutical manufacturing has not always kept pace with the progress in chemistry, yet the chemist, although at times very imperfectly trained, has always been an indispensable factor in the development of the industry and today the successful manufacturers are those who are making use of the most recent

*From symposium on the contributions of the Chemist to American Industries. Paper presented at the 51st meeting of the American Chemical Society, Seattle, Wash., reprinted from the Journal of Industrial and Engineering Chemistry.

discoveries in chemistry and medicine and to that end have built up organizations of well trained and highly specialized scientific workers.

The work of the chemist in the pharmaceutical industry has been characterized by the development of new products and improvement in the quality of products already established rather than by any reduction in manufacturing costs, although at the present time much attention is also being given to the latter problem. For many years it has been the custom of the more progressive pharmaceutical manufacturers to devote considerable sums of money to research along the various lines connected with their business, and for this reason much of the credit for the development of our present materia medica should be given to them. Chance and uncertainty in pharmaceutical manufacturing have been largely eliminated, and while ten or fifteen years ago much of the routine manufacturing could be carried on without the direct supervision of the chemist, it is now necessary to have every crude material thoroughly examined, every process controlled and every finished product assayed or inspected by competent chemists.

Among the earlier improvements, due entirely to the pharmaceutical chemist, the standardization of preparations made from vegetable drugs deserves especial mention. The crude drugs were found to vary enormously in strength and as their active principles became known and assay processes were developed, the manufacturers adjusted their preparations so that they were always of uniform strength. At that time the only pharmacopœial standard for such preparations was the fixed amount of drug used in their manufacture and the preparations when finished of course varied according to the strength of the drug from which they were made. The standards established by the manufacturers were based upon the strength of an average prime drug and the quantity of drug required varied inversely with its strength. Most of these standards were adopted by the Pharmacopœia many years later. This like many other improvements made by the chemist in this industry resulted in increased costs not only on account of the analytical work required, but also because of the greater care necessary to maintain these standards.

Thousands of different products are manufactured by every pharmaceutical house, and it has been the duty of the chemist during the past twenty-five years to study these products in order to discover their faults and improve them by modernizing the methods of manufacture. On account of the great number of products to be studied and the diverse problems involved, progress may seem slow, but if we look back even ten years we cannot fail to recognize the great improvement which has been made in the general line of pharmaceutical products. The keeping qualities of many products have been thoroughly studied, although only a few years ago very little was known in regard to the stability of medicines. Much remains to be done, and progressive manufacturers are sparing no effort to improve the quality and raise the standards of their products.

Many of the older classes of pharmaceutical products, however, are rapidly giving way to new medicinal agents which are established on a scientific foundation. This necessitates research with the object of developing new products to take the place of those which are falling into disuse, for the manufacturer who neglects this will see his business gradually going to his competitor who is awake to this necessity. Extracts and tinctures made from vegetable drugs can hardly

be considered scientific products even though standardized to a definite content of the active principles since they always contain many other substances which are either inert or possess undesirable physiological activity. Alkaloids and other definite principles isolated from vegetable drugs have already, to a large extent, taken the place of the various extracts and we may expect even greater progress in this direction during the next few years. The preparation of active extracts and definite principles from the ductless glands is one of the remarkable developments of the last fifteen years. Most of us have witnessed with interest the increase in synthetically prepared medicines from a very small beginning to a point where they are made to meet almost every therapeutic indication. The continued advance along the line of rational and exact medication has led the manufacturer to develop many of these new and improved therapeutic agents.

In one respect the position of the pharmaceutical manufacturer differs from that of manufacturers in other lines. The U. S. Pharmacopœia, a book of standards published under the authority of a convention whose members are appointed by various medical and pharmaceutical bodies, and the National Formulary, published by the American Pharmaceutical Association, have been made the legal standards for all preparations and substances described by them. It is evident that such legal standards are necessary and that the manufacture of medicinal products should be very carefully controlled. This being granted, it is very important that the standards be correct and the control judicious. The U. S. Pharmacopœia is revised decennially by a revision committee chosen by the convention already referred to. In making this revision the committee draws upon the published or privately communicated work of chemists and pharmacists and to some extent upon work carried on under its own direction. Much of the work of chemists for the manufacturing houses has been utilized in the compilation of the Pharmacopœia. Since the revision committee is a representative body in which all classes interested in the preparation and use of medicinal products have a voice, probably no better standards could be established, but it must be recognized that the progress which necessitates the revision of the book every ten years also renders many of the old standards obsolete long before the new edition appears. The National Formulary is a valuable book which was designed to serve as an unofficial guide in preparing commonly used preparations which were not described by the Pharmacopœia and its elevation to the rank of a legal standard seems to have been due to a misconception of its function.

While these two standards have been legalized by the Federal Food and Drugs Act, a very wise clause was inserted in the act which provides that preparations may differ from the standards so established if the standard be *plainly* stated on the label. This clause allows uninterrupted progress during the interval between revisions of the Pharmacopœia and insures new material and improved standards for the use of each revision committee. It is this clause which now enables the chemist to contribute actively to the manufacture of medicinal products.

In some quarters the repeal of this provision of the law has been advocated and since it has such an important bearing upon the relation of the chemist to pharmaceutical manufacturing, it should receive our careful consideration. The repeal of this clause would make it unlawful to market any product which differed in any way from the product described by the Pharmacopœia or National For-

mulary; manufacturers therefore could not profit by any improvement which they might make and all research tending toward the improvement of such products would be discontinued. When it is remembered that the most important medicines are described in the Pharmacopœia, that many are included in the National Formulary which afterward find their way to the Pharmacopœia, and that many of the articles dropped from the Pharmacopœia are subsequently inserted in the National Formulary, it will be seen that no more effective bar to progress in the production of medicinal products, than the elimination of this clause from the law, could be devised. It may be pointed out that the standardization of extracts and tinctures as well as many other improvements could never have been introduced by manufacturers if no variation from pharmacopœial standards had been allowed. Under such a law while manufacturers in every other line would be stimulated by competition to improve their products, the manufacturer of medicines would be legally prohibited from doing so. The contributions of the chemist to this industry would then be confined to routine analytical work and to the development of products which could be protected by patents; all improvements in medicinal substances now included in the National Formulary and Pharmacopœia would have to be made by the committees of revision with limited time and facilities and without manufacturing experience. It seems doubtful if such a law could be enforced, but if the matter is placed before our law-makers in the proper light, there can be no doubt that the federal law will remain unchanged and that the state laws will conform to it in this respect. If this course is followed, the progress in this industry, which has never been as rapid as at the present time, will be uninterrupted.

FEDERAL JUDGE HOLDS THAT MAIL ORDER DRUG HOUSES CANNOT SELL MEDICINES CONTAINING HABIT-FORMING DRUGS BY MAIL.

Medicines containing habit-forming narcotic drugs, traffic in which is forbidden by the Harrison law, cannot be sold through a mail order business, Judge J. E. Sater decided in Federal District Court at Columbus, Ohio, December 4. He dismissed a suit brought by the Dr. Nathan Tucker Asthma Specific Company of Mount Gilead, Ohio, to enjoin B. E. Williamson, Federal Internal Revenue Collector, from seizing the plant.

The court's decision declared medicines containing narcotic drugs may be prescribed by physicians only after a personal examination of the patient before each prescription. Diagnosis by mail is held illegal.

The decision is considered of far-reaching importance, since other proprietary remedies contain narcotic drugs or their derivatives and are sold by the mail order system.

REPORT OF THE COMMTITEE ON UNOFFICIAL STANDARDS.

The following portion of the report of the Committee on Unofficial Standards relates to certain crude drugs and chemicals suggested for inclusion in the next revision of the National Formulary, and by order of the Council is published in the Journal in order to afford opportunity for discussion before the standards proposed are finally adopted.

Manufacturers, importers, analysts, and others interested in any of the proposed standards, are requested to send their criticisms and comments to the chairman of the committee, George M. Beringer, 501 Federal St., Camden, N. J.

CARAMEL
Caramel

Saccharum Ustum. Burnt Sugar Coloring.

A concentrated aqueous solution of the product obtained by heating sugar or glucose, to which has been added a small amount of alkali or alkali carbonate, until the sweet taste is destroyed and a uniform dark brown mass results.

Caramel is a thick, dark, brown liquid having the characteristic odor of burnt sugar and a pleasant bitter taste.

Specific gravity not less than 1.35 at 25° C.

On spreading in a thin layer on a glass plate, it appears homogeneous, reddish-brown and transparent.

Caramel mixes clear with water in all proportions. One part dissolved in one thousand parts of distilled water, yields a clear solution having a distinct sepia tint and the color of the solution is not changed or precipitated after exposure to sunlight for six hours.

It is soluble in diluted alcohol, but it is precipitated when the alcoholic content of the solution is increased to 80 percent by volume or more.

It is insoluble in ether, chloroform, acetone, benzene, petroleum benzin or turpentine.

20 mils of an aqueous solution (1-20), is not precipitated on the addition of .5 mil of phosphoric acid.

On incinerating Caramel, it swells and leaves a coke-like charcoal, which burns off only after prolonged heating at a high temperature, and leaves not more than 8 percent of ash.

CHIONANTHUS
Chionanthus

Chionan. Fringe Tree Bark.

The recently gathered bark of the root of *Chionanthus Virginica* Linné (Fam. *Oleaceae*), with not more than 8 percent of other parts of the plant or foreign matter.

Usually in transversely curved pieces, occasionally in single quills, 1 to 10 cm. in length; bark 2 to 10 mm. in thickness; heavy, some pieces of the whole drug sinking when thrown into water; outer surface usually reddish-brown, occasionally grayish-brown, few transverse wrinkles, whitish cork patches and root scars; inner surface yellowish-brown, more or less striate and undulating; fracture short, hard, and coarsely granular due to projecting groups of stone cells; the broken surface of a light yellowish-white color.

Odor characteristic; taste bitter.

The powdered drug is light brown in color and when examined with the microscope exhibits; somewhat rounded, simple or 2-4 compound starch grains, mostly 0.003 to 0.010 mm. in diameter, occasionally up to 0.020 mm.; numerous stone cells, in groups and isolated, the walls thick, strongly lignified and with simple or branching pores; fragments consisting of light brownish thin walled cork cells; a large amount of parenchyma tissue, with many of the cells filled with starch grains. Chionanthus yields not more than 5 percent of ash.

CORYDALIS

Corydalis

Turkey Corn. Squirrel Corn.

The dried tubers of *Dicentra canadensis* (Goldie) Walp., usually somewhat mixed with the dried bulb-like portions of *Dicentra Cucullaria* (L) Bernh., (Fam. *Fumariaceae*), with not more than 5 percent of other parts of the plants or of foreign matter.

The tubers are rounded and frequently vertically depressed, the flattened surface more or less concave, up to 15 mm. in diameter; usually single, rarely two or more in a cluster; externally, minutely pitted or nearly smooth, grayish-brown, grayish-black or amber colored and more or less translucent; one of the flattened surfaces with a triangular scar from detached roots, the other usually with remains of the slender rhizome; fracture, hard and horny, exhibiting a yellowish waxy interior, or somewhat tough and granular exhibiting a yellow-white interior; nearly odorless; of a bitter taste.

The grains of the granulate bulb of *Dicentra Cucullaria* are plump ovoid or triangular ovoid and up to 12mm. in length; the larger grains distinctly concave on one surface, with a scar at the apex from the detached petiole, and usually attached to the short root-stock in clusters of three; the smaller grains usually separated from the rootstock, with an acute apex and a scar at the base; externally, yellowish or grayish-brown, usually translucent; fracture, hard and horny exhibiting a grayish waxy interior or granular and tough exhibiting a whitish interior; nearly odorless; of a slightly bitter taste.

The powdered drug is of a light yellow or of a yellowish-gray color, and when examined with the compound microscope exhibits: numerous oval, ovoid or oblong simple starch grains, the broad end of the grain sometimes truncate, up to 0.060 mm. in length and frequently with a cleft or horseshoe shaped fissure in the small end of the grain; occasionally two compound grains; altered starch grains up to 0.090 mm. in length; numerous angular or rounded parenchyma cells isolated or in groups and containing more or less altered starch grains the outlines of which are indistinct; tracheae few with reticulate, simple pores, annular or spiral markings; fragments of epidermal cells with thin brownish walls; sclerenchyma fibers very few or wanting; few characteristic sclerotic cells from the root stock of *Dicentra Cucullaria* irregular in outline, mostly elongated up to about 0.750 mm. in length and 0.100 mm. in width, walls heavily lignified and porous and about 0.020 mm. thick, occurring isolated or in groups of from two to four; very few sclerotic cells from the rhizome of *Dicentra canadensis*, mostly isodiametric, uniformly smaller than in *Dicentra Cucullaria* and with walls about 0.012 mm. thick, not distinctly irregular in outline; a very few rosette aggregates of calcium oxalate, up to 0.020 mm. in diameter, from the portions of rhizome of *Dicentra canadensis*.

An infusion prepared by placing 5 grammes of ground or powdered corydalis in 100 mils of hot distilled water, stirring occasionally during ten minutes and then filtering is of a light amber color, gives an alkaloidal ppt. with potassio-mercuric iodide T. S. and a dark blue color with Iodine T. S. (soluble starch).

Corydalis yields not more than 8 percent of ash.

MATICO

Matico.

The dried leaves of *Piper angustifolium* Ruiz and Pavon (Fam. *Piperaceae*) with not more than 5 percent of stems, flower spikes, or foreign substances.

Usually in compressed, matted masses with leaves more or less broken. Leaves subsessile, lanceolate, 10 to 20 cm. long, 2 to 5 cm. broad; apex tapering and acute; base slightly unequal, cordate; margin finely crenulate; upper surface dark green tessellated; lower surface pale green, reticulate with prominent yellowish-brown midrib and veins forming small quadrangular meshes clothed with matted pubescence.

Odor distinct, aromatic; taste pungent, pepper-like.

Sections viewed under the microscope exhibit: The epidermis, that of the upper side composed of regular polygonal cells and of the lower side of somewhat irregular and bent cells especially where covering the veins; numerous stomata and large bordering cells on the lower side; the hypoderm of 1 row and palisade cells in 2 or 3 rows; mesophyl of loose, spongy tissue; midrib in cross section oval, outer layer of thick walled

cork cells; secretion cells filled with yellow oil; upper surface with papillae and few bristly hairs; hairs of the lower surface of two kinds, the one 6 to 10 cells long, pointed, bent and matted and with thick walls and streaked cuticle; the other bristle hairs of one stem cell and a cap cell; calcium oxalate crystals few in parenchyma tissue of the venation, some raphides, others tabular.

Powder greenish-yellow and under the microscope exhibits the characteristic hairs, polygonal epidermal cells, and secretion cells of the leaf.

Matico yields not more than 18 percent of ash.

OLEUM BETULAE EMPYREUMATICUM RECTIFICATUM

Rectified Empyroligneous Oil of Birch.

Rectified Oil of Birch Tar. Oleum Rusci Rectificatum.

The empyroligneous oil obtained by the dry distillation of the bark and wood of *Betula alba* Linne (Fam. *Betulaceae*), rectified by steam distillation.

Limpid, dark brown liquid having a penetrating empyreumatic, tarry odor resembling that of Russian leather.

Specific gravity: 0.886 to 0.950.

It yields clear solutions with three times its volume of either absolute alcohol, ether, chloroform, glacial acetic acid, amyl alcohol, turpentine, benzole and carbon disulphide; not more than slightly turbid with the same volume of alcohol or purified petroleum benzin, and a decidedly turbid mixture with the same volume of methyl alcohol.

Warm 2 mils with 10 mils of distilled water, agitate and allow the mixture to cool, separate and filter the aqueous liquid. It should be colorless, have a strong empyreumatic odor and an acid reaction. 2 drops of potassium dichromate T.S. added to 4 mils of the aqueous filtrate produces a bright yellow solution which becomes darker and turbid. 1 drop of dilute ferric chloride solution (1 in 100) added to 4 mils of this filtrate produces a green coloration which changes to brown and becomes turbid (Distinction from Oil of Cade).

VANILLA

Vanilla Bean.

The cured, full-grown, unripe fruit of *Vanilla planifolia* Andrews (Fam. *Orchidaceae*).

Pods linear, flattened, from 15 to 35 cm. in length and from 5 to 9 mm. in breadth; summits terminating in flat circular scars; gradually tapering, more or less bent and curved or hooked at the bases, or in the Tahiti variety, broad in the middle and tapering towards either end, the base closely resembling the summit; externally blackish-brown, longitudinally wrinkled, moist-glossy, and occasionally with an efflorescence of vanillin in the form of acicular crystals or monoclinic prisms; frequently with narrow, elliptical or irregular, more or less wrinkled, dark-brown patches of cork; occasionally split into three parts near the tip, flexible and tough, 1-locular, containing a blackish-brown pulp and numerous blackish-brown seeds; the latter being flattened, irregularly triangulate or nearly circular in outline, reticulate and varying from 0.250 to 0.300 mm. in diameter; odor and taste characteristic and very agreeable.

Under the microscope, transverse sections of the pods of Vanilla show an epidermis with a somewhat thickened outer cuticularized layer having occasionally rounded or conical masses of the excretion of a gum-like substance; a layer of collenchyma of 1 or 2 rows of cells; a thick sarcocarp composed of parenchyma cells in which are imbedded an interrupted circle of fibro-vascular bundles; the parenchyma cells are deeply undulate in outline and usually contain a thin protoplasmic layer enclosing numerous oily globules or may contain bundles or raphides of calcium oxalate, the individual crystals varying from 0.200 to 0.400 mm. in length; some of the parenchyma cells are specially modified and distinguished by their somewhat thickened walls with long, oblique, slit-like pores or the thickening may extend in the form of broad, spiral bands; in the fibro-vascular bundles the phloem is central, being more or less surrounded by a few tracheae, the walls possessing slit-like pores or spiral thickenings, and at the outside of the bundle is a closed circle of sclerenchymatous fibers, the walls being thin, strongly lignified, pro-

vided with numerous, transverse, simple pores, the outer wall of the outer row of fibers being irregular or sinuate; from the inner walls of the endocarp arise the placentae bearing numerous brownish-red or blackish seeds; otherwise from the cells of the endocarp arise numerous long, nearly straight hairs, the ends being rounded, the hairs being more or less matted together by a gummy or resinous mass in which some of the seeds are held: in mounts made in hydrated chloral T. S. or potassium hydroxide T. S., the immature, brownish-red seeds show a deeply reticulate seed-coat, the cells being of an oblong-polygonal form in surface view.

Place a few of the crystals, occurring as an efflorescence on the fruit, on a microscope slide or watch crystal and add a drop of phloroglucinol T. S. and hydrochloric acid, the solution immediately should acquire a carmine-red color (distinction from *benzoic acid*).

The amount of extractive, using dilute alcohol, should be not less than 12 percent.

Vanilla yields not more than 6 percent of ash.

STREET DIRT, UNPROTECTED FOOD AND DISEASE.

Prof. C. H. La Wall, chemist of the Pennsylvania dairy and food commission, is said to have found the following assortment of objects and substances in raisins exposed for sale on a Philadelphia street: Pieces of prunes; beans and rice; strands of human hair and cat fur; cotton and wool fiber; straw and bits of bran; insect wings and legs; cigar and cigaret ashes, and a yellowed cigaret paper. While it does not appear that any of these unappetizing accessories were exactly proved to be carriers of contagion, the findings strongly suggest the possibilities of infection from food sold from uncovered pushcarts and stands.

THE VISCOSITY OF LIQUID PARAFFIN.

The importance of the viscosity of liquid paraffin is engaging the attention of medical men. *The London Lancet* has shown that the viscosity is more important than the specific gravity, for whereas the specific gravity may be the same for different samples the viscosities vary considerably. The higher the viscosity the more suitable is the oil for medical use as an internal lubricant. The viscosity at 100° F. (Redwood) varied in a series recently examined from 440 to 67 seconds. Medical men are awakening to the importance of high viscosity in liquid paraffin, and pharmacists may receive inquiries on this matter.

NOTICE TO EXCHANGES, ADVERTISERS, CORRESPONDENTS, ASSOCIATIONS, BOARDS OF PHARMACY, MEMBERS, BRANCHES OF A. PH. A., ETC.

The Office of the Journal of the American Pharmaceutical Association has been moved from 63 Clinton Building, Columbus, Ohio, to Philadelphia Drug Exchange, Bourse Building, Philadelphia, Pa. All communications, publications, etc., for the Journal and Editor, E. G. Eberle, should be addressed accordingly.

Editorial Notes and Announcements

E. G. EBERLE, Editor.....Columbus, Ohio

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

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REPRINTS.

If the request is made at the time copy is submitted, authors will be furnished reprints by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

100 copies, 4 pages, no cover, $2.50, with cover, $4.50.

200 copies, 4 pages, no cover, $3.00, with cover, $5.50.

50 copies, 8 pages, no cover, $2.75, with cover, $4.50.

100 copies, 8 pages, no cover, $3.50, with cover, $5.00.

200 copies, 8 pages, no cover, $4.50, with cover, $6.50.

50 copies, 12 or 16 pages, no cover, $4.00, with cover, $5.50.

100 copies, 12 or 16 pages, no cover, $5.00, with cover, $6.50.

200 copies, 12 or 16 pages, no cover, $6.50, with cover, $8.00

Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co., Columbus, Ohio.

A NEW FOOD?

The daily papers are apt to report as new and wonderful discoveries familiar things or those not of such recent discovery, but unfamiliar to their readers.

The story, to which the title has reference, is reported about as follows: "A bacteriologist in one of the trenches of Belgium discovered a mold which possessed a wondrous power of turning sugar into fat. Another yeast had been discovered which with the assistance of ammonium sulphate, will produce a considerable percentage of protein or 'meat'."

We do not desire to say that practical application will not be made and possibly a serviceable food will be developed, but the idea of utilizing yeast as food is not new nor, of course, the fact that starch and sugar and some form of nitrogen are converted into fat and protein. This is what occurs in animal and vegetable life.

Yeast in some form or other has been for ages and is now used as food and medicine. At one time it was quite extensively employed in the treatment of diabetes, because of its action on sugar. Experiments were made several years ago to determine the food value of yeast, when it was found that in limited amounts it was not objectionable, but prolonged or more extended diet produced disturbance of the digestion.

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NOBEL PRIZES AWARDED.

The Nobel prize for physics has been awarded to Professor Meed von Laue of Frankfort-on-the-Main, for his discovery of the diffraction of rays in crystals. The chemistry prize has been awarded to Professor Theodore William Richards of Harvard University, for fixing the atomic weights of certain elements. Professor Richards is director of the Gibbs memorial laboratory at Harvard, and a member of the International Commission on Atomic Weights. In 1910 he was awarded the Davy medal by the Royal Society of Arts and Sciences and in 1912 he received the Willard Gibbs medal from the American Chemical Society.

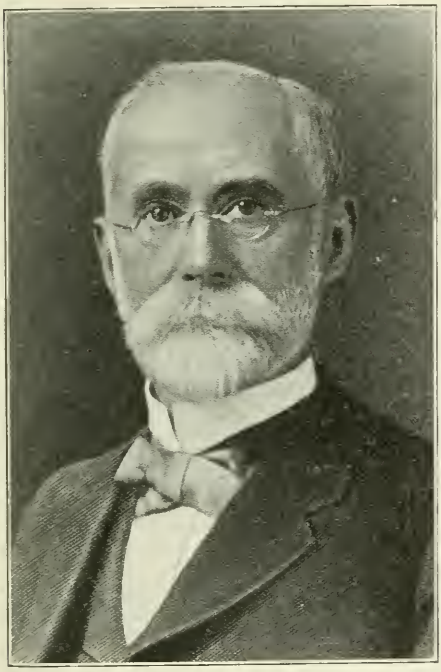
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SUBSTITUTE SPECIFICS SEIZED

Recently throughout the country, worthless imitation drug products have been seized by officials in charge of the enforce-

ment of the Food and Drugs Act. Itinerant peddlers are selling these imitations, made up and labeled similar to the preparations they are intended to represent. They do not confine themselves to the drugs, but dispose of them in tablet and other forms for administration. The reference is made because some of these venders are very persuasive and there is no limit to their assurance.

Obituary



SAMUEL A. D. SHEPPARD
Treasurer of the American Pharmaceutical Association from 1886-1908

While not unexpected, because of the enfeebled health of Mr. Sheppard, the news of his death came as a shock to his many friends. We regret deeply that the Journal is not in position to have a more extended reference of this lamented friend and member, but in the next issue further tributes will be published.

We know that ex-President John G. Godding will pardon our making use of a communication addressed to Secretary J. W. England of the Council A. Ph. A., and received just before completing this number of the Journal. The letter follows:

"You probably have learned of the passing away of our dear friend, S. A. D. Sheppard with pneumonia, on Sunday, November 28th. He was on his way to Pinehurst, N. C., stopping over with his son Robert at Newton Centre, where he was taken ill and passed away surrounded by relatives and friends. Funeral was from the son's residence, Wednesday, December 3d, and was largely attended. Members of the Board of Trustees of the Massachusetts College of Pharmacy and representatives from other pharmaceutical organizations were present. The services were conducted by the Rev. Mr. Cleaves, the pastor of the church which he attended at Newburyport during the summer. Interment was at Newton Cemetery. The floral offerings were many and beautiful.

"This removes one of the best known Pharmacists in New England, a genuine lover of his profession who has given liberally of his time and money for its interest. Personally I lose a friend of long acquaintance begun at the M. C. P. as classmate and working with him later for the interests of the M. C. P. our friendship strengthened as years passed by. A man of sterling character, companionable and lovable, considerate of those who did not agree with him. Thus the world loses a good citizen.

"His last appearance in public was last May at the Massachusetts College of Pharmacy Commencement where in the presence of a large audience he was given an Honorary Degree. His acceptance was in his usual bright and cheery manner with much good advice to those graduating.

"His passing away was as peaceful and beautiful as the life he had lived. We are better for having known him and fortunate to have been included in the circle of friends. His works and deeds will remain a monument to his memory.

Signed, JOHN G. GODDING."

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DERWENTWATER KIRKLAND

Derwentwater Kirkland, one of the most widely known drug men on the Pacific Coast, died on November 1, at the Fremont Hotel, Los Angeles, Cal. He was born on the high seas when his mother and father were enroute to Canada from Australia. He received his education and degree of pharmacy in Canada, and went to California in 1876, where he engaged in the drug business.

Some years later he conceived the idea of organizing a drug corporation to operate a string of retail stores throughout the western coast states and formed the Owl Drug Company, being elected its president. Six years ago, he resigned the presidency of the Owl Drug Company and retired, but later, with his brother, John Kirkland, organized the American Drug Company, which now has two large stores in Los Angeles. During the forty years he was in business in California, Mr. Kirkland made a host of friends. He became a member of the American Pharmaceutical Association in 1889. He was sixty years of age, and is survived by one sister and three brothers. J. W. E.

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DR. JOSEPH A. HEINTZELMAN

Dr. Joseph Augustus Heintzelman, a member of the American Pharmaceutical Association since 1858, aged eighty-one years died at his residence, 2000 Ridge Avenue, Philadelphia, on October 19, 1915. For 51 years he has been a practicing physician and pharmacist in the neighborhood where he lived. He was graduated from the Philadelphia College of Pharmacy in 1859. He was prominent in the Masonic fraternity and in various German organizations. Dr. Heintzelman was a genial, lovable pharmacist of the old fashioned school, and loved his profession.

Dr. Heintzelman is survived by two sons and a daughter, one of the sons being Dr. Joseph Heintzelman, Jr. J. W. E.

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DEATH OF MRS. MERRELL

Mrs. Cornelia Spear Merrell, widow of the late George Merrell, for many years president of the Wm. S. Merrell Chemical Company, and one of the best known pharmaceutical men in the country, died at the family residence in Cincinnati on November 12th, surviving her husband but eleven months to the day.

Mrs. Merrell was the eldest daughter of Samuel and Rachael Spear. She was but twenty and Mr. Merrell twenty-one when they were wedded. Their married life was a most ideal one and so tenderly united were they that Mrs. Merrell never rallied after the death of Mr. Merrell. Even those who were most near and dear to her felt that in her passing—it was as she would have wished it—for they are now together.

Mrs. Merrell was most active in club work in Cincinnati, where her executive ability was always most highly appreciated.

Surviving her are two brothers, Joseph C. Spear, secretary of the Spring Grove Cemetery Association, and George Spear, president of the St. Louis Edible Nut Company, and three sons, Stanley W. Merrell, one of the judges of the Superior Court, and Charles G. and Thurston Merrell, actively connected with the Merrell Company.

The Bulletin Board

Bulletin VI—Financial report of the National Committee on the Pharmaceutical Syllabus, September 28, 1914, to July 31, 1915.

RECEIPTS.

Sale of 144 copies of the Syllabus and a/c postage on same	$164.71
Contribution from American Pharmaceutical Association	25.00
Contribution from American Conference of Pharm. Faculties	25.00
Contribution from National Association of Boards of Pharmacy	25.00
Proceeds of note for $200, due September 18, 1915, to Paul Revere Trust Company, Boston	195.87
Total	$435.58

EXPENDITURES.

C. F. Williams & Son, balance on bill for printing	$242.95
Henry L. Taylor, repayment of cash advanced	115.82
Postage	21.35
Printing letterheads, envelopes, order blanks, etc.	14.75
Typewriting and duplication of bulletins	11.00
Express charges	3.74
Stencil paper for bulletins	3.40
Premium, insurance on plates for printing Syllabus	2.00
Exchange on checks	1.70
Total	$416.71
July 31, 1915, cash on hand	18.87
	$435.58

BROOKLYN, N. Y., Nov. 5, 1915.

This is to certify that I have compared this report with the books and vouchers of the Secretary-Treasurer, and find the same to be correct.

WILLIAM C. ANDERSON, Auditor.

The receipts from the sale of the Syllabus include a small amount received and forwarded by Dr. Henry L. Taylor, the preceding secretary-treasurer.

Some copies were sold at $1.00 each and others at $1.25, plus postage.

The note to the Paul Revere Trust Company was made by vote of the executive committee and the proceeds were used to pay all other indebtedness. When this note came due in September, $100 was paid on it and a new note for $100 given for the balance.

All twenty-one members of the committee voted affirmatively on Motion 271, to allow the Journal of the American Pharmaceutical Association to use the committee's plates of portraits of deceased pharmaceutical workers. The plates have been forwarded to Editor Eberle and several have already been used.

The president of the American Pharmaceutical Association has appointed George M. Beringer to succeed himself on the Committee, also Professor P. Gerhard Albrecht for the unexpired term of Henry L. Taylor, resigned.

The National Association of Boards of Pharmacy has elected Ellis E. Faulkner to succeed Charles Gietner and the American Conference of Pharmaceutical Faculties has elected Theodore J. Bradley to succeed himself.

With these changes the Committee now has the following membership:

From American Pharmaceutical Association:

Term Expires
1916. William B. Day, Chicago, Ill.
1917. Willis G. Gregory, Buffalo, N. Y.
1918. P. Gerhard Albrecht, Cleveland, Ohio.
1919. Charles Caspari, Jr., Baltimore, Md.
1920. Eugene G. Eberle, Dallas, Tex.
1921. Harry B. Mason, Detroit, Mich.
1922. George M. Beringer, Camden, N. J.

From National Association of Boards of Pharmacy:

1916. William Mittelbach, Booneville, Mo.
1917. John W. Gayle, Frankfort, Ky.
1918. William H. Rudder, Salem, Ind.
1919. George C. Diekman, New York, N. Y.
1920. Mason C. Beebe, Burlington, Vt.
1921. John Culley, Ogden, Utah.
1922. Ellis E. Faulkner, Delton, Mich.

From American Conference of Pharmaceutical Faculties:

1916. Henry H. Rusby, Newark, N. J.
1917. James H. Beal, Urbana, Ill.
1918. Charles W. Johnson, Seattle, Wash.
1919. Clement B. Lowe, Philadelphia, Pa.
1920. William C. Anderson, Brooklyn, N. Y.
1921. Julius A. Koch, Pittsburgh, Pa.
1922. Theodore J. Bradley, Boston, Mass.

Respectfully submitted,

THEODORE J. BRADLEY,
Secretary-Treasurer.

Boston, November 15, 1915.

Societies and Colleges

STATE BOARD "GUARANTEED."

Up to the present time candidates can take the State Board Examination as pharmacist in New Jersey without any preliminary education and without being graduates of recognized colleges of pharmacy. A number of "fakers" have taken advantage of this.

For years there have been rumors that certain parties were getting sums of money from students on the assurance that through friendliness or "pull" with members of the State Board they could have students passed. Sums ranging from $50.00 to $300.00 have thus been extracted from the victims.

Naturally these rumors have been anything but pleasing to the board members, and while they have been prosecuting an investigation, they have been unable, up to this time, to obtain evidence, it is understood, that would warrant laying the matter before the authorities for prosecution.

In addressing the 160 persons who were taking an examination at the State House in Trenton, New Jeresy, President Strauss told them that it was unwise to pay out their money under such promises. It was pointed out that persons could legally give them instructions, but when they accepted money with the inference that through influence or pull with the members of the Board they would be passed, these individuals were going too far.

It is reported that evidence has been secured against one of these "fakers" who is now held by the Grand Jury of Hudson County. No doubt this will act as a warning against other "fakers" who are obtaining

money under false pretenses from their victims. It is also high time that such practices be stopped by the enactment of a law requiring college of pharmacy education in New Jersey.

OTTO RAUBENHEIMER, Phar. D.

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Work of the Association.—The American Association for the Advancement of Science will hold its next convocation-week meetings in Columbus, Ohio, from December 17, 1915, to January 1, 1916, under the presidency of Dr. William Wallace Campbell, Director of the Lick Observatory, Mt. Hamilton, Cal.

The annual meetings are usually attended by two thousand or more of scientific men and women and it is expected that the coming meetings will surpass previous meetings in the importance of their scientific programs.

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PERFUMERS PLAN CAMPAIGN AGAINST STAMP TAX.

By a unanimous vote, members of the Manufacturing Perfumers' Association of the United States placed that organization on record as unalterably opposed to the proposed re-enactment by Congress of the emergency revenue stamp tax on perfumes, cosmetics and similar toilet articles and made plans for preventing the passage of such a measure in the forthcoming session of Congress, at a special meeting, held November 15, in the Hotel Biltmore, New York City.

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MEETING OF THE EXECUTIVE COMMITTEE OF THE ILLINOIS PHARMACEUTICAL ASSOCIATION.

The semi-annual meeting of the Executive Committee of the Illinois Pharmaceutical Association was held at the office of the Secretary in Chicago on Tuesday, November 16, 1915.

There were present at the meeting, President J. H. Riemenschneider, Third Vice-President J. R. Phillips, Secretary W. B. Day, Executive Committeemen H. J. Holthoefer, I. M. Light, John Lueder, J. P. Crowley, J. J. Boehm, L. P. Larsen, H. F. Schaper, O. H. Mentz, W. D. Duncan, H. C. Porter, Hugh Marshall, H. O. Hartley, C. F. Frison, W. F. Baum, G. M. Bennett, E. H. G. Kreiling, R. A. Clarkson, P. L. Gain, F. L. Pfaff, J. C. Wheatcroft and G. W. Bower, also Mr. J. H. Wells of the Legislative Committee and F. M. Mares of the School of Pharmacy Committee.

The report of the Treasurer was read and showed a balance in the treasury as follows: In the general fund $1252.14, in the permanent fund $600.00, in the Beal prize fund $100.00.

The President reported verbally outlining the Membership campaign which is being carried on successfully with the aid of a committee of one hundred members. President Riemenschneider urged the members of the Executive Committee to give their earnest aid in furthering this membership campaign.

The Secretary reported verbally and stated that more than one hundred new members had been received since the last annual convention; an excellent start for the membership campaign.

President Riemenschneider announced his intention of bringing the total up to five hundred new members before the next convention. He stated that the Illinois Pharmaceutical Travelers had pledged their cordial support and had already sent in a number of applications.

A letter from Mr. R. E. Dorland, Chairman of the Legislative Committee, making suggestion as to proposed legislation was read. Upon motion of Mr. Boehm it was ordered that one or more letters be sent to all the druggists of Illinois as soon as Congress meets to urge the druggists to write their congressmen at once opposing further imposition of stamp taxes and favoring the Stevens Bill.

Upon motion of Mr. Crowley it was ordered that the Chairman of the Legislative Committee be instructed to formulate a program for proposed legislation and present this program at the annual convention in Springfield next June.

It was decided that the Secretary should take care through his office of such bills for printing and postage as will be necessary for the work of the Committee.

Upon motion of Mr. Wells it was decided that the Propaganda campaign be deferred until the annual meeting on account of changes now being made by reason of the

revision of the U. S. Pharmacopœia and National Formulary.

The nominations for the voting cards for Board of Pharmacy and Advisory Board were then considered. The Chicago members in caucus presented nominations of Chicago members for these voting cards. The committeemen from the other congressional districts presented names of the members in their districts. By vote the President and Secretary were authorized to fill vacancies. The complete list follows:

CANDIDATES FOR THE BOARD OF PHARMACY.

Congressional Districts 1 to 10 inclusive—Bruno Schultz, Chicago; Theophilus Schmid, Chicago; W. T. Adams, Chicago; Frank Dubsky, Chicago; John J. Chwatal, Chicago; John Myers, Chicago; T. Mygdal, Chicago; Harry Moyer, Chicago; Jacob Topf, Chicago; Fred O. Schmidt, Chicago; District 11, Edwin Hall, Elgin; District 12, E. J. Feurer, LaSalle; District 13, Fred Skeyhan, Rockford; District 14, P. D. Roark, Macomb; District 15, R. C. Webster, Canton; District 16, John Kneer, Jr., Peoria; District 17, W. T. Shorthose, Bloomington; District 18, C. F. Ehlers, Danville; District 19, Archer T. Davis, Decatur; District 20, Byron Armstrong, Jacksonville; District 21, Stuart Broadwell, Springfield; District 22, G. A. Hartnagel, E. St. Louis; District 23, C. F. Greer, Centralia; District 24, W. A. Ball, Carmi; District 25, Thomas Rixleben, Jonesboro.

CANDIDATES FOR THE ADVISORY BOARD UNIVERSITY OF ILLINOIS

Congressional Districts 1 to 10 inclusive—George McDonald, Chicago; Louis A. Schmid, Chicago; Wm. P. Knoche, Chicago; Paul Finninger, Chicago; Samuel Antonow, Chicago; George Horn, Chicago; W. T. Knick, Chicago; George Moyen, Chicago; Andrew Scherer, Chicago; John V. Lee, Evanston; District 11, P. M. Fahrner, Joliet; District 12, C. J. Lutz, Ottawa; District 13, Gus Kirchner, DeKalb; District 14, E. Jericho, Moline; District 15, T. B. Shaffer, Oneida; District 16, Albert Zimmerman, Peoria; District 17, A. F. Reinders, Mt. Pulaski; District 18, Peter X. Senger, Danville; District 19, Geo. Cunningham, Champaign; District 20, F. S. Tarbill, Havana; District 21, W. E. Claypool, Springfield; District 22, J. W. Gain, E. St. Louis; District 23 L. H. Reed, Centralia; District 24, Ferne E. Peters, West Salem; District 25, F. M. Hewitt, Carbondale.

Upon motion of Mr. Wells it was decided to extend an invitation to some prominent pharmacist to address the next annual convention. The arrangements were left with the President and Secretary.

A discussion then ensued as to the arrangement of the program and the annual convention. Upon motion of Mr. Light it was ordered that the business program be prepared by the President and Secretary.

The following resolution was offered:

"WHEREAS, The National Drug Clerk, published at Chicago, has been and is now advocating measures and principles which, if put into effect, will materially increase the expenses of the already overburdened retail druggists throughout the State of Illinois. Be it

Resolved, That the advocacy of such measures and principles by the National Drug Clerk are considered by the executive committee of the Illinois Pharmaceutical Association, inimical and detrimental to the interests of retail druggists, and that those who aid or encourage the publication or advocacy of such matters are, in our opinion working against the interests of, and for conditions that may ultimately cause the financial ruin of many retail druggists."

The resolution was quite fully discussed and was carried without division.

Upon motion of Mr. Light the President was instructed to appoint a committee of three to investigate the securing of greater publicity for the Association work generally.

The meeting then adjourned.

W. B. DAY, Secretary.

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STATE UNIVERSITY OF IOWA, COLLEGE OF PHARMACY.

The Short Course Drug Conference was postponed from November 12 and 13 to Nov. 30 and Dec. 1.

Among the speakers were Dean F. J. Wulling, of Minnesota, Dr. J. H. Beal, of the University of Illinois, and H. B. Mason, of Detroit.

The following topics were discussed by the speakers:

Elements of Competition

Efficiency as applied to the Management of a Drug Store.

Advertising.

Knowing your Goods.

Accounting.

Economics of Business.

Store Arrangement and Decoration.

Salesmanship.

Store Management.

Discussion of the Stevens Bill.

Discussion of the Harrison Law.

Phi Delta Chi held their Founders' Day banquet on Friday, November 5, at the chapter house on Clinton St.

Dr. C. S. Chase acted as toastmaster and responses were given as follows:

The San Francisco Convention of Phi Delta Chi, Dean W. J. Teeters.

Professional and Academic Fraternities, Prof. R. A. Kuever.

Inconsistencies, L. K. Fenelon.

The Fraternity from the Standpoint of an Alumnus, H. F. Doden.

Phi Delta Chi as We are and as We Hope to Be, J. C. Liek.

Out-look of a Pledge, R. D. Stewart.

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COLLEGE OF PHARMACY, UNIVERSITY OF MICHIGAN.

A silver loving cup, to be known as the A. B. Prescott Scholarship Cup, will be awarded by the National Organization to the chapter of Phi Delta Chi which ranks highest in scholarship. The chapter winning it for three years in succession will be entitled to retain it permanently.

Azor Thurston, of the class of '84, has established a "Scholarship Prize" of $25, which will be awarded annually to the active chapter of the Phi Delta Chi which obtains the highest average grade. There will be some keen competition from now on and the results will be awaited with great interest.

Wilber F. Jackman of Detroit, Mich., A.B. '86, Ph. C. '87, formerly Professor of Pharmacy in the College of Pharmacy of the University of Maine, has associated himself with Professor Charles H. Rogers, Ph.C. '11, on the teaching staff of the newly organized College of Pharmacy of the University of West Virginia, Morgantown, W. Va.

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COLLEGE OF JERSEY CITY.

The Department of Pharmacy of this College has adopted the standards of the Regents of New York, beginning with the Collegiate year 1915-16. At the meeting of the Board of Regents of the University of the State of New York, held in Albany, on October 21, 1915, the Department of Pharmacy of the College of Jersey City has been officially recognized and has thus become a Registered College of Pharmacy. Consequently, the graduates beginning with May, 1916, are enabled to take the State Board Examination for Licensed Pharmacist in the State of New York.

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NEW YORK COLLEGE OF PHARMACY.

The Membership Committee of the Board of Trustees presented applications for membership from the following gentlemen, who were elected at the last Trustees' meeting: Samuel Albert, Joseph Altman, Richard A. Austin, Frank A. Coleman, Jerome A. Crane, Emanuel J. Emelin, Philip Fitz, B. C. Gould, Frederick W. Kaye, J. C. Keogh, G. C. Klippert, Bela Kramer, John Leverty, John A. Leikauf, George W. Luft, William A. MacDonald, George Phillips, Edward Plaut, Robert Plaut, J. W. Reed, E. R. Rogers, David Schwartz, William L. Snow, Harry E. Steinhilber, Rudolph Theis, M. R. Thurlow, Adolph Wiegand, J. Warren Wiley, A. W. Yates.

It is a source of great satisfaction that the retail pharmacists of New York City are showing a new interest in the work carried on by the College. This institution was founded and is maintained under the supervision of an association composed almost entirely of retail druggists, with the main object of preparing young men to become efficient and valuable clerks in their stores. As every registered pharmacist in this state must be a graduate of a recognized college of pharmacy, it should be of personal interest to every druggist to see that the College in his city is in a position to present the best in pharmaceutical education. It is the aim of the Trustees and present members to have every retail pharmacist in New York City a member of the College. The College has lost by death, in recent years, some of its best friends, and although their places have been taken by those who are carrying on the work in the same progressive and wholly satisfactory way, still it is necessary, in looking to the future, to continually add new blood to the organization. The number of new

members already elected this year is a big step in the right direction.

The Senior class of the College has elected the following officers: President, G. Harold Dowsey; Vice-President, Mrs. Estella J. Baddour; Secretary, Victor Johnson; Treasurer, Conrad Klingele; Historian, Miss Mary E. Meier.

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CHICAGO VETERAN DRUGGISTS' ASSOCIATION.

The meetings of the Chicago Veteran Druggists' Association should stimulate the druggists of every large city to organize for like purposes. Such organizations offer the opportunity for those who are closely linked to early pharmacy of this country to reminesce and inform the younger generation of the progress in pharmacy that is being made. It keeps the older members young in spirit and permits them to enjoy happy companionship.

At the Detroit meeting of the American Pharmaceutical Association it was resolved to encourage similar organizations by the Branches. Evidently little has been done in that direction but the Chicago Association continues to enjoy the meetings and profits thereby.

Recently the 86th birthday of Honorary President O. F. Fuller was appropriately observed, a farewell celebration was tendered member Albert Hunt who departed for California to join with members Jamieson and Patterson, and a memorial meeting was held in memory of F. J. Schroter.

Thus it is that good cheer and deep sorrow formulate the program of these gatherings. Those who have passed away are remembered, and the living enjoy the pleasures of fraternity.

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TWO COMPOUNDS OF EMETINE WHICH MAY BE OF SERVICE IN THE TREATMENT OF ENTAMEBIASIS.

A review of the history, chemistry and pharmacology of ipecac, with the suggestion that emetine mercuric iodide and emetine bismuthous iodide be used in the treatment and also in the prophylaxis of entamebiasis. Emetine mercuric iodide is prepared by precipitating an acidified aqueous solution of emetine hydrochloride with Mayer's reagent, collecting, washing the precipitate with water and drying in the air, below 50°. Emetine bismuthous iodide is prepared in a similar way by the use of Dragendorff's instead of Mayer's reagent. Theoretically these compounds should be decomposed only slightly in the stomach, but should liberate emetine in the intestinal tract. The compounds may be given in doses of 0.03 gm. without causing nausea or vomiting.—Chemical Abstracts.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

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NEW YORK.

Minutes of the regular meeting of the New York Branch of the American Pharmaceutical Association held at the New York College of Pharmacy Building, October 11th, 1915, called to order by President Lascoff at 8:40 p. m.

Upon motion the minutes of the May meeting were adopted as printed in the Journal of the A. Ph. A.

Upon motion the reading of the minutes of the special memorial meeting held in September was dispensed with and they were adopted.

The Treasurer's report was received with thanks.

Mr. McElhenie, member of the Council, reported asking for the opinion of the Branch as to how they wished him to vote on the question of Professor Diehl's proposed salary.

Dr. H. V. Arny read a letter he had sent to Dr. H M. Whelpley and stated that he believed that Prof. Diehl's many years of service to the Association merited this slight token. After considerable discussion favorable to the motion before the council, Mr. McElhenie was informed that the Branch favored the paying of the said salary.

Reports of Committees:

Membership—Absent.

Legislation and Education—Progress.

Progress of Pharmacy—Absent.

Reports of delegates to the annual meeting of the A. Ph. A. Former President Mayo presented a very interesting report on

the social activities of the San Francisco meeting.

Former President John C. Gallagher of the New Jersey Pharmaceutical Association reported on the meeting held at Spring Lake last June.

President Charles J. McCloskey of the N. J. Pharmaceutical Association was called upon by the Chair and supplemented Mr. Gallagher's remarks.

Professor Geo. C. Diekman sent a letter regretting his absence and enclosed a detailed report of the New York State meeting, which was read by the secretary.

All the above reports were accepted with the thanks of the Branch.

A communication from President Lascoff, appointing the following as a Committee on Resolutions, was received: Messrs. Diner, Diekman, Bigelow, Arny, Lascoff, Weinstein and Hostmann.

Applications for membership were received from Dr. Philip Eichler and Mr. J. S. Potter and were ordered sent to the General Secretary.

Prof. Arny then read a paper on "Standard Colored Fluids," which was illustrated with many interesting exhibits.

The paper was discussed by Messrs. Wimmer, Diner, Raubenheimer, Mayer and others, and was accepted with the thanks of the Branch.

A percolator for the manufacture of tincture of iodine was then exhibited. After some discussion the consensus of opinion was that it was not of any practical value.

President Lascoff then gave a very successful and interesting demonstration of his new "Capsule and Ampule Filler." This called for a very animated discussion taken part in by Messrs. Diner, Wimmer, Raubenheimer, Mayo and others.

The thanks of the Branch were extended to the President and the meeting then adjourned.

JEANNOT HOSTMANN, Secretary.

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SAN FRANCISCO.

The San Francisco Branch of the American Pharmaceutical Association met on November the ninth in the office of the Pacific Pharmacist. Dr. A. Schneider, the president, presided. The minutes of the October meeting were read and approved.

A communication from Secretary Day was read and the question of increasing the membership was put before the members. A wide-awake campaign will be commenced immediately for new members.

During the review of current pharmaceutical literature, extracts from the Journal of the American Medical Association, Mercks Report, the Druggists' Circular, Journal of the N. A. R. D., A. Ph. A. Journal and other valuable publications were given. Formulas for the preparation of castor oil in powder form and for cod liver oil jelly were discussed. Mention was also made of the Autolysin treatment for cancer, and it was said that this treatment offers nothing better than the older methods.

The affairs of the Branch will be in charge of the following newly elected officers: President, Joseph L. Lengfeld; Vice-President, Jennie Maguire White; Secretary-Treasurer, Clarissa M. Roehr. The December meeting will be held on the fourteenth, 723 Pacific Building.

CLARISSA M. ROEHR, Secretary.

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NASHVILLE.

The regular meeting of the Nashville Branch A. Ph. A. was held in a joint session with the Nashville Drug Club in the Music Room of the Nashville Y. M. C. A., Thursday afternoon, Nov. 18th, with D. J. Kuhn presiding. After the minutes were read and approved, Congressman Joseph W. Byrns was introduced, who explained the provisions of the Stevens Bill and stated many good reasons why he thought the bill should be enacted. He said that most of the work of Congress was done by committees and that the passage of the bill depended largely on having it reported favorably by the committee to which it was referred.

Letters were read from Senator Luke Lea and ex-Governor M. R. Patterson, favoring the measure. The bill was then discussed at length by different members. The point was brought out that Senator Stevens, the author of the bill, had been defeated and that someone else would have to reintroduce it at the next session of Congress.

On motion of W. R. White, a resolution was passed requesting Congressman T. W. Sims to support the measure. Congressman Sims is a member of the Committee on Interstate and Foreign Commerce to which the bill was referred. Similar letters were or-

dered sent to all the other Tennessee Senators and Congressmen. Gus A. Blodou was instructed to prepare a friendly reply to the North Nashville Medical Society in answer to a communication received from them criticizing local druggists.

A paper reviewing the current drug journals was read by Dr. J. O. Burge.

The question of prescription prices was then discussed, after which the Branch adjourned.

WILLIAM R. WHITE, Secretary.

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NORTHWESTERN BRANCH.

The first 1915 Fall meeting of the Northwestern Branch of the American Pharmaceutical Association was held at the Nicollet Hotel, Minneapolis, on Friday evening, Oct. 22nd. The business meeting and program for the evening were preceded by a dinner beginning at 7 p. m. Under the heading of new business, the secretary offered a motion providing for the endorsement by the Branch of the Stevens Bill and the principles contained therein. The motion received a second by Mr. Chas. H. Huhn and was unanimously carried.

Letters of regret at inability to be present at the meeting were read as received from R. J. Messing, President of the Minnesota State Pharm. Association; William Abbett of Duluth and Max Menzel of Pipestone, Minn.

After the brief business meeting, the following program was carried out:

1. How a Pharmacopoeia Is Revised, by Prof. H. M. Whelpley, Dean of the St. Louis College of Pharmacy and Treasurer of the American Pharmaceutical Association.
2. The National Association of Boards of Pharmacy, by Mr. H. W. Rietzke, President of the Minnesota State Board of Pharmacy.
3. The American Conference of Pharmaceutical Faculties, by Dean F. J. Wulling.
4. A Further Report of the Study of Spirit of Nitrous Ether, by Prof. Gustav Bachman.
5. Recent Judicial Opinions on the Harrison Anti-Narcotic Law. Discussion by Messrs. Huhn, F. A. U. Smith, Tupper, Wulling, Morland, Frost and others.
6. The San Francisco Pharmaceutical Meetings. An Incompatible Prescription. Drugs Produced in Minnesota in 1915, by E. L. Newcomb.

H. M. Whelpley, Dean of the St. Louis College, as a member of the Board of Trustees of the U. S. Pharmacopoeial Revision Committee, spoke at length and in detail on how the U. S. Pharmacopoeia is revised. The several headings in the following outline were well covered by the speaker:

The Pharmacopoeia Far-Reaching; Pharmacopoeia Defined; Early Pharmacopoeial Revision Work; Recent Pharmacopoeial Revision Work; Influence of the Food and Drugs Act; Medical Influence on the Pharmacopoeia; Why Pharmacists Have Not Deserted the U. S. P.; The Scope of the U. S. P.; Legal Status of the U. S. P.; Work of a Pharmacopoeial Convention; and How the Committee on Revision Works.



Dean H. M. Whelpley of the St. Louis College of Pharmacy examining specimens of the root systems of Rheum palmatum and Rheum officinale in the Medicinal Plant Laboratory of the College of Pharmacy of the University of Minnesota. Photograph through courtesy of Professor E. L. Newcomb.

The work of the Committee on Revision goes on so quietly that no one realizes the nature or full extent of the task. The General Committee consists of fifty-one members who work without salary or assurance of adequate remuneration. This large body finally passes on all questions brought before it and must approve the Pharmacopoeia as a whole before the pages are electrotyped for printing. Each of the fifty-one members has

a large ring cover in which to file the recent correspondence. The letters are mimeographed on legal cap size sheets. The pages are numbered consecutively and the letters dated and numbered. Canvas binders are furnished, each holding five hundred sheets of the accumulated correspondence. Thus each member has a complete set of valumes covering all the work of the General Committee. The last circular is numbered 326, dated October 16, 1915, and closes with page 1876. This means that 95,676 sheets like this exhibit were mimeographed and mailed to fifty-one members of the General Committee on Revision. The General Committee is divided into fifteen sub-committees on different subjects. Each one of the smaller committees has a chairman who conducts correspondence with the associates on his committee. Each member of a sub-committee has a full set of all the correspondence of the committee. As some persons serve on two or more committees, this correspondence becomes very voluminous. The Executive Committee of fifteen receives the reports of subcommittees and votes on them before subjects go to the General Committee for approval. The last Executive Committee letter is Number 651 and is on page 3358, October 9, 1915. These are mimeographed on letter size sheets. The Executive Committee has to date required a total of 52,370 sheets. This, together with the General Committee sheets, makes a total of 148,046 sheets to date. As sheets of both circulars and letters in addition to the above are sent to five trustees, we must add 28,170 sheets, making a grand total of 176,216 sheets exclusive of the over run for reserve sets. It is probable that at least 200,000 sheets have been mimeographed to date, including the work of mimeographing and mailing, we can allow one minute's time for each sheet. This is the equivalent of 3,333 hours, or 416 days of eight hours each. This makes no allowance whatever for the work of individual members of the committee in studying, experimenting and commenting on the information contained in these sheets. This statement of mechanical labor will give some idea of the mental work which has thus far been recorded. It is merely the summing up of the committee work, which in turn is based on the work of individual pharmacists, the world over. The pharmacopoeial work of the American pharmacists is, indeed, the great work of the pharmacists of this decade. Subjects of interest are:

Digest of Comments on the U. S. P.; Board of Trustees of the U. S. P. Convention; The Sale of the Pharmacopoeia; Spanish Translation of the U. S. P.; Payment for Use of U. S. P. Text; Authority to Use for Comment; Pharmacopoeial Income; Pharmacopoeial Expenses; Honoraria for Pharmacopoeial Work; The Chairman of the Committee on Revision; Proof Reading on the Pharmacopoeia; U. S. P. Publicity; The New Pharmacopoeia; How the Pharmacopoeia Should Be Revised.

*After the address by Dean Whelpley, Mr. Rietzke referred to the organization of the National Association of Boards of Pharmacy, its function and usefulness, and explained the methods employed by the Minnesota Board for granting reciprocal registration.

Dean Wulling spoke briefly concerning the intimate relationship between the National Association of Boards of Pharmacy and the American Conference of Pharmaceutical Faculties.

Prof. Bachman presented in tabulated form a detailed report of the rapidity of deterioration in spirit of nitrous ether, which had been kept under varying conditions. The table elicited a lively discussion in which the following took part: Messrs. Rietzke, Wulling, Friedman, Newcomb, and Dr. Rock.

Mr. Chas. H. Huhn opened the discussion on recent judicial opinions on the Harrison Anti-Narcotic Law. The discussion was continued by Messrs. Morland, Tupper, Kline, Griffin, Von Rohr and Goodrich. In closing, Mr. Huhn stated that if there was a loophole in the Harrison Anti-Narcotic Law, the National Association of Retail Druggists would exert every effort possible to have the law amended or so changed that the effect of the law would be as desired by the pharmacists.

Dr. Newcomb in referring to the San Francisco Pharmaceutical meetings, directed the attention of the members to the reports in the pharmaceutical journals and called particular attention to the large number and variety of papers which were presented in San Francisco. He also called attention to a prescription which called for Tincture of Iodine, Ammonia Water and Collodion in equal parts, stating that the mixture was in-

* Dean Whelpley's address proved most interesting and instructive, especially to those who have not had actual experience in the revision of the Pharmacopoeia. A vote of thanks was tendered Dean Whelpley for presenting the instructive paper.

compatible, on account of the stronger ammonia water being an aqueous preparation, which gives a precipitate of cellulose from the collodion, and that physicians who desire to use this preparation should prescribe the Spirit of Ammonia, which being an alcoholic preparation, is compatible with Collodion.

About 20 specimens of drugs produced from medicinal plants grown in the medicinal plant garden of the College of Pharmacy of the University of Minnesota during 1915 were exhibited by Dr. Newcomb. Special attention was called to a specimen of the root system Rheum Officinale, which showed the large rhizomes from which Shensi Rhubarb is prepared. Among the specimens exhibited were Belladonnae Folia, Hyoscyamus, Stramonium, Cannabis sativa, Phytolacca, Marubium, Chenopodium, Belladonnae Radix, Inula, Digitalis and Datura tatula, the leaves of which will be official in the U. S. P. IX.

In closing, Dr. Newcomb called attention to the use of Powdered Abrus in the treatment of the advanced stages of trachoma. A specimen of whole Abrus or Jequirity seed was exhibited, and the toxic nature of the drug referred to. Recent prescriptions in the Northwest have called for Abrus in the form of a fine powder. The speaker also stated that the drug was sometimes used in the form of a 4 percent infusion, prepared with normal salt solution. The use of Abrus was further discussed by Mr. Morland, who referred to the use of the drug in Europe.

Among those outside of the Twin Cities who attended the meeting should be mentioned Mr. Robert Morland of Worthington, Minn.; Mr. Arthur VonRohr of Winona, Minn.; and Mr. George H. Goodrich of Anoka, Minn.

A total number of about 60 were present.

E. L. NEWCOMB, Secretary.

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WEST VIRGINIA.

The West Virginia Branch of the A. Ph. A. met Friday evening, November 5th, at Woodburn Hall, West Virginia University, and was called to order by President W. A. Ream. The following gentlemen were appointed to the Committee on Pharmaceutical Education: C. A. Neptune of Parkersburg and W. H. Moore and A. B. Berry of Morgantown.

Professor C. H. Rogers read a very interesting paper on "Fakes," giving the results of analyses of a number of the most prominent ones.

Mr. Jackman gave a talk on "Scale Salts of Iron." Mr. Jackman showed a thorough knowledge of the subject.

A feeling of good fellowship pervades these meetings and they are thoroughly enjoyed by all.

A. B. BERRY, Secretary.

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PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday night, November 9th, at the Temple College of Pharmacy.

President Henry called the meeting to order at 8:15 o'clock and the minutes of the last meeting were read and approved. There being no new or unfinished business, the program of the evening was taken up.

John K. Thum, Ph.G., presented "A Review of Pharmaceutical Literature."

Prof. Charles E. Vanderkleed gave a very interesting account of his experience in "Europe in War Times."

The remainder of the evening was devoted to a spirited discussion of the subject, "Is Tetanus Caused by Vaccination?"

Dr. F. E. Stewart read a paper on the subject and his view that tetanus is not caused by vaccination was upheld by Dr. Wadsworth and Dr. J. F. Schamberg, but was rather violently opposed by C. Oscar Beasley, President of the Pennsylvania Anti-Compulsory Vaccination Society.

J. ED. BREWER, Secretary.

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CITY OF WASHINGTON.

The initial meeting of the City of Washington Branch of the American Pharmaceutical Association, 1915-16, was held Wednesday, October 27, 1915, at the National College of Pharmacy. The attendance was fair and the subjects for discussion were the annual meeting of the A. Ph. A., by Professor Henry P. Hynson, Baltimore; and the annual meeting of the N. A. R. D., by Mr. J. Leyden White.

Mr. Hynson presented his subject in a very humorous manner and created much amusement telling anecdotes incident to the trip and meeting. He recalled that everything

good of a pharmaceutical nature had been started by the A. Ph. A.; that this was true of the San Francisco meeting in the work accomplished in harmonizing the schools and boards, resulting in a closer relationship between the American Conference of Pharmaceutical Faculties, National Association of Boards of Pharmacy and the American Pharmaceutical Association. The determination to work for pre-requisite requirements and four years of high school education by 1920 seemed to be satisfactory to all interests.

The report of the Commission on Proprietaries was in his judgment the best piece of work that had been started in years by the A. Ph. A., and was more than commendable. He suggested that a coalition of all pharmaceutical bodies would be desirable and should be established under the auspices of the A. Ph. A. He pointed out that the membership had fallen to about 3,000, that the Council was too large to transact business satisfactorily, and that the financial condition of the organization was not the best at the present. In his judgment the establishing of higher educational qualifications would result in the elimination of unendowed teaching institutions, unless those interested would work to bring about assistance from the State and this could be done on the grounds of public safety. Mr. Hover's paper showing the profit on the prescription end of the business was worthy of careful study, as it showed from reliable statistics that this part of the business amounted to about 13 percent net profit, going to show a good reason for more commercialism in pharmacy these days.

Mr. J. Leyden White was unable to be present and his paper was presented by the Secretary. He pointed out a satisfactory financial condition of the N. A. R. D. due principally to the income from its Journal. The all-absorbing issue of this convention was the question of standardization of selling prices and the endorsement of the Stevens bill. This measure, in its broadest sense, was so constantly in evidence at the convention as to represent the chief reason for the existence of the Association. The Association reaffirmed and vigorously declared its determination to preserve the identity of the drug store as a pharmacy. Propaganda movement failed to show any great advancement. It was, however, decided to continue this work. The Harrison narcotic law was a feature and while some dissatisfaction existed with reference to T. D. 2213, they were unanimously of the opinion that much more had been accomplished in a few months than was ever expected. The creation of a Committee on Postal Affairs was an innovation that should bring about much good. The relation of liquor to the drug store was discussed and the conclusion reached that it had its place in pharmacy, (this was questioned by the members present) and that nothing could be done at present nor until internal revenue laws were amended, and that house-cleaning, if any were needed, would have to be deferred.

Both papers elicited much discussion that was entered into by all members present. Some of the facts brought out by Mr. Hynson resulted in the following resolutions being presented by the Secretary:

WHEREAS, The Council of the American Pharmaceutical Association has very profitably and wisely largely grown in the number of its members and has become a desirable and effective working body at the annual meetings; and

WHEREAS, A Council of this size can not be maintained and its business properly transacted by mail; therefore,

Be it resolved, That it is the sense of the Local Branch of the American Pharmaceutical Association of Washington, D. C., that the Council should be authorized to elect three members, who, together with the Chairman and the Secretary of the Council, shall constitute an executive committee, this committee to be empowered to carry on the business of the Association as mapped out at its annual meeting during the intervals of the said annual meetings. A resolution was also presented relating to the finances of the Association and providing for a special committee. (This is now being considered by the Council.)

After discussing same, both resolutions were unanimously approved and the Secretary directed to forward them to the Secretary of the Council.

The Secretary presented a communication received from the Deputy Commissioner of Internal Revenue, relative to T. D. 2241, authorizing the use of formula No. 19, equal parts of ethyl alcohol and ether, and providing this special denatured alcohol for use in the manufacture of Collodion. This com-

munication was most interesting, in view of the fact that the department holds that collodion is a varnish and not a medical preparation and that the use of this special denatured alcohol in the manufacture of collodion is permissible *only* where the collodion is entirely free from medicinal properties.

S. L. HILTON, Secretary.

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BALTIMORE.

Minutes of the November meeting of the Baltimore Branch of the American Pharmaceutical Association, held Wednesday, November 17th, at 8 p. m. The notice of the meeting read: Of the three important events scheduled for this month, one happened on the Tuesday after the first Monday, one is to occur on the Wednesday after the third Tuesday, and the other is to be celebrated on the Thursday after the last Wednesday. All of us who could, should have exercised, and it is to be hoped, that in the near future, some of us who couldn't will exercise the suffrage on the first of these three happenings. All of us can and, we are sure, will, enter at least privately, if not publicly, into the spirit of the last of these celebrations. All of us ought to be present at the occurrence between the first and last of these events and help make this another good meeting of the Branch. We are to have with us Dr. Herman Engelhardt, who was the Chairman of the Scientific Section of the American Pharmaceutical Association, and he is to review the work of this Section.

THE JOURNALS.

Six of the Journals have been assigned to as many different members, and we are to have presented, for our information and discussion, one or more articles from each.

Dig out something interesting from your Journal, bring it along and discuss it with us.

The Secretary has promised, if time permits, to tap his Odoriferously Historical Eight-barreled-mothball-sale paper for our amusement if not for our edification.

A paper by Dr. Engelhardt was presented in which he reviewed the work of the Scientific Section of the parent association, and the part which caused most discussion was that which considered Professor Scoville's paper on "Tinctures."

Professor Scoville had carried out experiments covering a period of four years in order to find out whether or not tinctures made from fluidextracts were just as effective and stable as those prepared by the U. S. P. processes, and his conclusion was: "On the whole, tinctures made from fluid extracts compare very favorably with those made direct from the drugs; in the case of the standardized tinctures, the strength is necessarily the same and the stability is fully as good, if not better." The inference as to non-standardized of course being that, as those which could be subjected to chemical and physiological tests were all right, the others must be.

In the discussion it was brought out that one pharmacy of an exceedingly high reputation possibly owed considerable of its success to the uniformity and reliability of its tinctures, which were made from assayed fluidextracts wherever possible, and this method was contrasted with the practice of some pharmacists dispensing unassayed tinctures made from assayed and even unassayed drugs which might or might not represent the proper strength.

The absurdity of the Pharmacopœia directing that tincture of nux vomica be made from a powdered extract when it already recognized an assayed fluid extract, was pointed out.

In this connection, however, it was emphasized that infusions and decoctions must never be made from fluid extracts as the menstruum used was entirely different.

The final clearing up of the difference of opinion between the Branch and one of the Journals by the latter conceeding the non-solubility in oils as well as non-miscibility of ichthyol with oils by the Journal publishing a paper on the subject, which was the result of the Branch's activities, brought out, that the proper way in which to incorporate ichthyol with fats in ointments was to spread a thin film of the fat over considerable of the surface of the ointment slab and to place the ichthyol on this, add the rest of the fat and incorporate immediately. Any portion of ichthyol allowed to stick to the slab or exposed unprotected for even a short while to the air was likely to dry out hard and form specks which would not rub out and which would make the ointment unsightly.

Along the line of solubility, the sparing

solubility of phosphorus in chloroform was discussed and the pharmacopœia was criticised for directing phosphorus to be so dissolved in making pills of phosphorus.

With great difficulty it is soluble in chloroform and it was suggested that the best form in which to incorporate it into pills is by using phosphorized resin.

The formation of the poisonous quinotoxin in long-standing combinations of aspirin and quinine salts was considered and the statement was made that a pharmaceutical house had put out thousands of boxes of compressed tablets containing among other ingredients these two chemicals, and had been putting them up for years and not a single case of bad symptoms had been reported. The well-known idiosyncrasy of some persons to quinine was cited as possibly being the cause of the reported bad effects.

The ruling of the Bureau of Chemistry that a drachm is the one-sixteenth of an avoirdupois ounce was thought unfortunate as reviving an obsolete weight and the sense of the meeting was that it ought to be reconsidered and the apothecary's drachm, or sixty grains, be declared official.

Mr. Meyer presented a prescription calling for: Copaiba, 4 drachms; balsam peru, 2 drachms; oil of turpentine, 2 drachms, and syrup of lemon sufficient to make 6 ounces.

Several different ways of mixing this were tried and each seemed a little worse than the other. The balsam peru being the disturbing factor. Several took down the formula and are to report at the next meeting as to their success or lack of it.

In commenting on the new Pharmacopœia it was pointed out that there will be many changes in it and it will be almost necessary for pharmacists to go to school again and that already classes were being formed in other cities to learn of the changes and to become familiar with them, and, with this end in view, the Executive Committee was instructed to endeavor to arrange for a series of lectures on the new U. S. P. to be given by Dr. Caspari and to be under the auspices of the Branch.

The Executive Committee was instructed to confer with the proper committee from the Retail Druggists' Association in an effort to hold a joint meeting with them in December, at which the assistant advertising manager of one of the local papers was to be the principal speaker. The subject was to be along the lines of "Drug Store Advertising" and the idea was the outcome of a somewhat similar topic along other lines in which the advertising of proprietary preparations was considered.

A committee consisting of Miss Patterson, Mr. Lowry, Mr. Meyer and Mr. Neal was appointed to work out a different form of organization or to effect a readjustment along the lines of a compact body, the membership of which was to be small but thoroughly active and alive and that on special occasions the entire pharmaceutical interests could be invited to attend and at the regular meetings would be welcome, but that the notices of the latter would be sent only to the actual active membership.

As the hour was so late, adjournment was made and the Secretary did not read his paper on Moth-ball Sales, and, as it was along the line of advertising, it could better be considered at the next meeting.

WM. J. LOWRY, JR., Secretary.

I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble, or a prettier shell than ordinary whilst the great ocean of truth lay all undiscovered before me.—*Isaac Newton.*

The Pharmacist and the Law

DENATURED ALCOHOL PERMISSABLE IN MAKING NON-MEDICATED COLLODION.

Mr. S. L. Hilton has sent us the following which is a copy of a reply to his letter and is quoted in part. The specially denatured alcohol is made by mixing equal parts of ethyl alcohol and ethyl ether:

I have made a careful examination of the letter from S. L. Hilton, Washington, D. C., dated the 11th instant, relative to T. D. 2241, authorizing the use of denatured alcohol in the manufacture of U. S. P. Collodion. He makes three points in his argument as to why this T. D. should be revoked:

1st: That collodion is a medicine.

2nd: That collodion is mixed with other medicinal agents and that these compounds are medicinal.

3rd: That retail druggists in certain cases have the habit of making collodion and by reason of T. D. 2241, and the inability to obtain specially denatured alcohol, they would be unable to compete with larger manufacturers.

I think point No. 3 is immaterial to this office as it is simply an economic discussion.

In regard to point No. 1, I would quote from Wood's Therapeutics, page 630:

"Collodion—This is a solution in alcohol and ether of pyroxylin or soluble guncotton, which consists chiefly of the tri- and tetranitro-cellulose; upon evaporation collodion leaves on the skin an adherent protecting film. Physiologically, *guncotton is inert.*"

It would, therefore, seem according to Wood that Collodion is not a medicine.

In regard to point No. 2, I would state that undoubtedly when collodion is mixed with iodine and other true medicinal agents some medicinal action would be exerted upon the human skin, therefore, there might be some question as to whether collodion manufactured from denatured alcohol should be used in such a preparation. However, since such preparations are only applied externally and before the effect is obtained the denatured alcohol is all evaporated. I would think it a very narrow construction of the law to revoke the permission in this instance.

As stated above I believe that there is no question but what U. S. P. collodion is not in any sense a remedy or medicinal preparation.

Respectfully,
(Signed) A. B. ADAMS,
Chief Chemist.

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AMENDMENTS TO NEW YORK HEALTH BOARD MEDICINE REGISTRATION ORDINANCE.

The New York Health Board has amended the Medicine Registration Ordinance so that the third paragraph of Section 117 now reads:

The expression "proprietary or patent medicine," for the purposes of this section, shall be taken to mean and include every medicine or medical compound, manufactured, prepared or intended for internal human use, the name, composition or definition of which is not to be found in the United States Pharmacopœia or National Formulary, or which does not bear the names of all the ingredients to which the therapeutic effects claimed are attributed and the names of all other ingredients except such as are physiologically inactive, conspicuously, clearly and legibly set forth, in English, on the outside of each bottle, box or package in which the said medicine or medicinal compound is held, offered for sale, sold or given away.

Subdivision e of Section 116, relating to misbranding reads:

(e) If any proprietary or patent medicine to which the provisions of sections 117 of this Code relate shall fail to contain every ingredient the name of which shall have been filed in the Department of Health, pursuant to section 117 of this code as a constituent part of said medicine, or if such proprietary or patent medicine shall contain any ingredient the name of which is required by the provisions of section 117 of this code to be filed in the said department which name has not been so filed. (S. C. Sec. 69.) (The provisions of subdivision (e) shall take effect December 31, 1915.)

PROPRIETARY MEDICINE MEN TO FIGHT NEW YORK FORMULA DISCLOSURE ORDINANCE.

Characterizing the adoption of the proprietary medicine formula disclosure and registration ordinance of the New York City Health Board as "an arrogant assumption of a power which is non-existent in that board," members of the Proprietary Association of America voted as a body, at a special meeting, held in the Hotel Astor, New York City, on November 16 and 17, to ignore the provisions of section 117 of the local Sanitary Code, embodying this ordinance. The association also voted to offer legal and financial aid in the defense of any and all distributors of their goods who may be subjected to prosecution by the local health department for handling medicinal preparations which have not complied with the provisions of the ordinance by filing their qualitative formulas and registering with the Health Department authorities after December 31, when this ordinance becomes operative.

It was also voted at this meeting to safeguard the interests of the proprietary medicine industry against such emergency revenue taxation as that which has been levied upon perfumes and cosmetics through the stamp tax which became effective December 1 of last year and which Congress may attempt to continue through a re-enactment of Schedule "B" of the Emergency Revenue Act, after December 31 of this year.—From Paint, Oil and Drug Reporter.

<>

WAR DEPARTMENT

List of changes of stations covering period ending October 31, 1915, in the cases of Sergeants First Class, and Sergeants Hospital Corps.

SERGEANTS FIRST CLASS.

Richard A. Wood, from on furlough in the U. S., to Frankford Arsenal.

Paul M. Lange, from Ft. Clark, to the Philippines Department.

Eugene Weber, from Ft. Barry, to ordered to the Philippines Department.

Fred O. Wells, from Ambulance Company No. 3, to the Philippines Department.

Richard T. Edwards, from the 13th Cavalry Hospital, at Columbus, N. M., to the Philippines Department.

Maynard Heatherly, from the 6th Cavalry Hospital, Southern Department, to the Philippines Department.

Charles M. Shaw, from Ambulance Company No. 5, to Ft. Porter.

Julius Strauss, from Rock Island Arsenal, ordered to Ft. Omaha.

Elmer H. Simons, from the Office of the Surgeon, Port of Embarkation, to Rock Island Arsenal.

John L. Collins, from Field Hospital Company No. 1, to the Philippines Department.

John Hodgins, from Ft. Monroe, to Ft. Michie.

Hans Hoch, from the 17th Infantry Hospital, Eagle Pass, Texas, to Ft. Washington.

John Keralla, from Ft. Washington, to Ft. Wood.

Christopher Killikelly, from Ft. Wood, to Field Hospital Company No. 6.

Charles G. Manning, from Ft. George Wright, to Ft. Apache.

Max Dohle, from Ambulance Company No. 2, to the Philippines Department (ordered).

George J. Shull, from Ft. Thomas, to the Philippines Department (ordered).

Henry Aicklen, from Field Hospital Company No. 3, to the Philippines Department (ordered).

Charles R. Bartlett, from Ft. Worden, to the Philippines Department (ordered).

William F. Coleman, from the Cantonment Hospital, Galveston, Tex., to the Philippines Department (ordered).

Frederick Thomas, from Ft. Crockett, to the Philippines Department (ordered).

SERGEANTS.

William J. Maney, from Ft. Jay, to Ft. Totten.

Joseph Levy, from Plattsburg Barracks, to Ft. Jay.

Robert D. McElrath, from Ft. Yellowstone, to Ft. Bliss.

Arthur Bade, from Ft. Totten, to Ft. McKinley.

Edward H. Krog, from Key West Barracks, to Plattsburg Barracks.

Charles W. Jensen, from the Cable Boat "Joseph Henry," to the Organized Militia of Rhode Island.

George C. Daily, from Ft. Sam Houston, to Ft. Sheridan.

James F. Griffin, from the Philippines Department, to the Letterman General Hospital.

Rex M. Davenport, from Ft. Oglethorpe to Ft. Barrancas.

Everett E. Maddison, from Field Hospital Company No. 3, to ordered to the Philippines Department.

Richard Bennett, from Ft. Totten, to San Juan, P. R.

Andrew J. Billings, from the 2nd Division, Texas City, Texas, to Ft. Sheridan.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

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To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

FLAKE, W. L.
From residence unknown
To Water Valley, Miss., (former address.)

BROMME, WM. L.
From E. Kalispell, Mont.
To Anamoose, N. D.

METZGER, ARTHUR S.
From Cairo, Ill.
To Malden, Mo.

HAESSLER, L. M.
From 1960 W. Madison St., Chicago, Ill.
To 1947 W. Madison St., Chicago, Ill.

STORER, C. A.
From Cor. Rush & Ohio Sts. Chicago, Ill.
To 4105 Kenmore Ave., Chicago, Ill.

TUPPER, E. A.
From 800 Tenth St., Minneapolis, Minn.
To Chicago and Tenth Sts., Minneapolis, Minn.

PORRO, ALVARO.
From 17 San Francisco, Camaguey, Cuba.
To Marti 23, Camaguey, Cuba.

DAVENPORT, J. S.
From residence unknown
To 6 F. A., Douglas, Ariz.

DIETZ, HENRY W.
From residence unknown
To U. S. A. Transport Merritt, Manila, P. I.

FENDER, WALTER E.
From residence unknown
To Ft. Monroe, Va.

HARDENBROOK, BURTON.
From residence unknown
To Ft. Missoula, Missoula, Mont.

LEWIS, WALTER.
From Ft. Sherman, Cristobal, Canal Zone.

MARCUS, SAMUEL.
From residence unknown
To Ft. Ward, Wash.

MCENROE, ROBT. L.
From residence unknown
To Ft. Sam Houston, Texas.

TANNEY, LEWIS.
From residence unknown
To F. H. Co. 2, Presidio, San Francisco, Cal.

WAITZ, AUGUST H.
From residence unknown
To Ft. Flager, Wash.

BERNHARD, MAGNUS.
From residence unknown
To Syracuse, N. Y.

KISHON, ADOLPH M.
From residence unknown
To 417 Flower St., Los Angeles, Cal.

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